

BIRDS OF THE WATER,
WOOD AND WASTE



H. GUTHRIE-SMITH

Touffes fraiches

STORRS L. OLSON



Female Falcon about to cover Young.

693
G94
Birds

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erbant
H. GUTHRIE-SMITH.

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To G. M. G.-S.

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Preface.



UTIRA is situated in the northern portion of Hawke's Bay, and in most maps of the Dominion the lake, some miles in length, may be seen marked as a tiny speck some distance inland, and about midway between Napier and Wairoa. Certainly there is no better run in Hawke's Bay, and probably no sheep station in New Zealand has at this date its natural advantages of barren and waste land.

East of the lake, and running north and south, extends a range of limestone formation, with great spurs branching off at right angles, and stretching towards the sea.

The hill slopes of this part of the run are exceedingly steep, and the several tiers of ancient ocean floor very conspicuous.

On the extreme west, and also running north and south, rises the Maungahararu, another and a loftier limestone range.

Betwixt these two—the mountains on the west and the hills on the east—lies the bulk of the run, lower in elevation and chiefly consisting of valley lands and tilted terraces.

The whole of this great trough has the rounded contours characteristic of pumaceous country, and has been probably the bed of some vast old world river system or great chain of almost stagnant lakes.

The limestone range east of the lake at one time grew admirable covert of all sorts, dense fern, high tutu, koromiko, and a considerable area of “whitey-wood” bush, kowhai, fuchsia, rama rama, ngaio, kai-whiria, etc., etc., with pines in the richer and damper bottoms, and bird life was then abundant.

Its value, however, during the last score of years has much depreciated; fires have swept the hill sides, grasses and clovers have become established, and except for the grazing of sheep, large areas have become

almost worthless. Even here, however, the destruction has not been complete; still on the cliffs and alongside the "under-runners" grow many berry-bearing trees, and the flats along the lake edge, too, are distinctly useful.

They may in these days indeed be accounted assets of no inconsiderable value, inasmuch as they are too nearly at lake level to admit of proper drainage and ploughing, and their growth of *carex*, "cutty grass," and *raupo* provide excellent harbourage for the smaller rails and other interesting species.

The great pumaceous region extending over the centre or trough of the run has not yet—though scrub-cutting and ploughing are in progress—been seriously affected.

Everywhere over these lower lands, the subsoil is a soft clay rock, and throughout this portion of the run ramify a network of creeks. These begin as mere narrow bottomless bogs; as, however, they increase in water volume and establish a scour, the sharp pumice grit quickly wears through the soft rock beneath, and the quagmire

deepens into a gorge. With these advantages, this part of the run is almost ideal cattle country, for the beasts that don't break their necks reaching for scrub on the cliffs, mostly bog themselves in search of the rough grasses grown on the quagmires.

No runholder who wishes to get the utmost out of his property should own cattle. The damage they do is enormous, spreading grasses everywhere, opening up the rough corners of paddocks, and smashing down the smaller species of scrub so necessary for covert for birds.

On the far west Tutira reaches to nearly 3,500 feet above sea level, and the upper slopes and tops are covered with valuable woods—timber impossible to get out for milling purposes, and which even if felled could not be got to carry a fire. The soil is indifferent, the climate humid, and in the natural forest clearings wineberry at once springs up. These range tops, perhaps, may be reckoned as my best country, for they are well stocked, and carry a good head of rare native species. They are, moreover, for long likely to remain intact and unspoiled.

The photographs shown were taken throughout the seasons of 1908 and 1909. During

the latter I had Mr. J. C. McLean as assistant for several months, and have to thank him for help, both in the dark room and field.

All the prints from which the blocks have been prepared were done from my negatives by Mr. G. F. Green. I have therefore the satisfaction of knowing that the utmost has been got out of often very indifferent material. I have also to thank Mr. Green for the friendly interest taken in the preparation of this little volume, and to acknowledge many suggestions in regard to its outward form and appearance.

I am obliged to Mr. Frank Stopford for having carefully gone over the proof sheets.

Finally, one word in regard to the illustrations themselves.

Many of them, I am perfectly well aware, are unsatisfactory. I have, nevertheless, thought them worth producing, not for themselves, but as illustrative of some interesting point in the bird's life history or as proof of its perfect domestication.

The photogravures and tone blocks have been excellently done by Messrs. Hood & Co., Middlesbrough, England.

BIRDS OF THE WATER, WOOD, AND WASTE

The Lake



THE lake on Tutira may be considered the heart of the run. It is the centre of all the station's life and energy; all roads, sheep paths, pack tracks and stock routes lead to it. The little homestead, the married shepherds' houses, the men's quarters look on to it. On the peninsula, Te-rewa-a-mapoutunoa, which almost bisects the lake, stands the woolshed. Every one of us sees the lake first thing in the morning, clear and shining in the sun, or still wan and clay stained for weeks, and even months, after one of the torrential rain storms that strike this part of Hawke's Bay and bring the hill-sides down like melting snows off a roof.

We see it last thing at night, the moon marking its narrow silver path, or in dark, clear weather the stars reflecting themselves.

The briefest morning glimpse at its surface serves to inform us what kind of a day is to come, and when in summer the hills are browning—an event which happens once in about ten years—and there are hopes of grass fires, a glance lets the eager shepherds know of that rare event, a good “burning” day—a gale from the west and north-west blowing out of a cloudless sky. Too often, however, the lake looms out unpropitious, and we can trace the day’s disaster on its morning face. At its southern end rises the Racecourse Top, Te ahi-titi, as least as reliable as the average meteorological prognostication. If, when a change is evidently coming up from the south, no mist rests on its rounded top, the change will pass off as a “dry souther,” a skiff of big cold drops blown up in fierce raw gusts; even when rain continues and the fatal cloud cap remains away, our auguries are hopeful, and though half an inch or so may fall, we do not anticipate a “buster.” When the cloud cap settles heavy rain always follows.

Then three-quarters of the work done on the station is accomplished within eyeshot of the lake, all the fertile hill country where the ewes run lies round about its edges, all the smaller paddocks slope to its shores. On the homestead side winds the public road; the other side is the main thoroughfare of shepherds and their sheep, that pass in mile-long, loose-linked, stringing mobs.

In fact, fair weather or foul, daylight or dark, at water level or from the range tops running parallel, the lake is always the prime feature of the landscape. The name Tutira signifies a row or file, and there can be no doubt that ages ago there must have been three lakes in a line running north and south, firstly Waikopiro to the south, in dry weather separate from the larger lake, then Tutira, and thirdly a swamp Tauringa-miro-miro, of several hundred acres, now filled up with slips from the hills on the east, and with pumaceous deposits and sand brought down from north and west by the Papakiri stream. This ancient lake, Tauringa-miro-miro, would have been nearly cut off from the waters

of Tutira by the peninsula Te Puna, on the east, and on the west by the ridge Te Korokoro-o-te-hine-rakai.

These three sheets of water might quite well, therefore, have been considered separate lakes, and given rise to the name Tutira. The natives, on the other hand, declare the word Tutira is taken from a particular stance assumed during the spearing of eels, and this, I believe, is the more probable derivation. These sheets of water were probably pools and backwaters of a vast old-world river system that at one time flowed rapidly, and at a later period oozed in chains of lakes at the base of the western mountains behind the present Maungahararu range, and which have left the conglomerate deposits that everywhere crop up throughout the centre of the run. Then at a later geological period the lakes must have drained themselves directly towards the ocean from the southern end, and not as at present from the nor'-west corner. It is impossible to fully enter into this subject here, but a bit of corroborative evidence may be considered—the evidence

of the eels. During floods these creatures assemble in multitudes at the extreme southern end of the lake, and can be there heard splashing and flopping, or seen noseing along the shores. Apparently they are gathered in obedience to ancestral habit, acquired perhaps during scores of centuries and which still compel this attempt on a long-closed route.*

The depth of Tutira is some eighty feet, and its original star shape must have been very beautiful, the rays then running deep into the hills and the whole country under dense forest.

NOTE.—A few miles distant from Tutira there is a big coastal lagoon, shut off in fine weather from the ocean by a shingle ridge, and here I have often watched the natives take advantage of the eels' migratory instinct. When, after rain, the lagoon has become very full, and is about to break out, whole pafuls of Maoris arrive, and, scooping out narrow trenches of seven or nine feet long in the beach, allow the lagoon water to flow seawards. The eels, waiting in thousands for the anticipated bursting of the ridge, feel the draw of the escaping water, and enter the narrow trenches. As they are seen to pass the watcher at the lagoon's edge blocks for a moment the seaward flowing stream. Instantly it percolates into the shingle and leaves the unlucky eel wriggling in the trough of the dry channel. In this manner thousands are taken in a night, the victims, entering the shingle, are scooped out not only singly, but often in pairs; this continuing hour after hour.

These arms or branches are now, however, and have been for ages, filled up with land slips, and each century adds to the rounded appearance of the lake. Even in my time the hundreds of thousands of tons of slips and silt brought down in floods have noticeably filled up the bays Kaiteratahi and Kaihekanui. This process of filling up, though slow, is nevertheless more rapid than during the past centuries, for then forest and scrub, tall raupo and flax, blocked the bulk of the silt. The destruction of much of this indigenous vegetation now allows this mud to reach the lake more rapidly and more directly. This process must always continue, and the lake is destined ultimately to contract itself into a narrow, crooked creek flowing on the west edge of its present formation, for on the west the hill slopes are less steep and the slips washed down enormously less in volume.

Even this, however, would not be the last change in the area now filled with water and called Tutira lake.

In imagination we have seen its waters gone and its basin completely filled with

washings from the hills, but peering even further into the future, we shall find not only the lake gone, but its very base vanished, and the alluvium collected for centuries once more displaced and carried direct to the sea.

Through the centre of the lake will then run a long, deep valley, with arms extending up each of the branch flats, every one of which will have again become a gorge.

At present, as has already been mentioned, Tutira is drained from its nor'-west corner by the Papakiri, which stream after a tortuous course of half a mile through level flax swamp, reaches the old native crossing. Immediately below this crossing begin a series of overfalls and waterfalls, culminating in a leap of over a hundred feet. This fall may be some sixty chains from the lake, and the ledge over which it rushes is to some extent eroded year by year. I imagine that the fall has receded lake-wards some two feet since the eighties, but exact accuracy is impossible as the landmarks, by which I have tried to gauge the

wear and tear, have themselves moved. There is, however, growing on the stream's edge, immediately above the fall, a certain kowhai tree, whose bole is, I believe, a foot or two nearer the chasm's rim than twenty-five years ago. At all events, there can be no doubt that the action of the water is slowly tending lakewards, and although this is at present almost imperceptible, yet there are reasons to suppose that under certain possible circumstances it might become rapid, and that thus the alluvial deposits of the lake basin, accumulated during centuries, might be washed away in weeks. At any rate, because there has been almost no movement for years, it does not necessarily follow that such conditions will continue, and many instances of sudden erosion have occurred on Tutira even in my time. One will suffice. After years of quiescence the ditch, three feet deep and two feet wide, draining Kaihekanui flat, became in a single flood and in a few hours, a chasm one hundred and forty feet wide, fifteen feet deep, and three hundred feet long. The water had at last, after thirty years, got

into softer strata and gutted out in a few hours this great weight of soil. Some such catastrophe might likewise happen in the far future to the big waterfall. Already there is a cavern extending far beneath the ledge over which the water flows, and proving thereby the existence of a softer rock beneath.

Should, therefore, the hard upper crust give way or wear out—as must eventually happen—and should the stream's course continue to tap a soft material, the progress lakeward of this deep rift would be relatively rapid.

The lake basin itself in time would be reached, and its contents of soft alluvium very quickly washed out. Each little rill and brook draining the branch flats would gut out into a gorge; the flats would disappear, and the foothills resting on them would in their turn begin to move, until in a short time a steep valley similar in all respects to others in the district would be formed. The lake, in fact, is no more a permanency than are the great conglomerate cliffs of our pumaceous lands, whose every

pebble, aeons ago, has been frost fractured on the heights of old world hills and rounded in old world streams. Now again they are crumbling into modern river gorges to be carried down to modern seas and ground to grains of sand. "The thing that hath been, it is that which shall be; and that which is done is that which shall be done: and there is no new thing under the sun."

This account of the lake may not perhaps be thought too lengthy when its bird life is considered, for besides three species of rail, the White Heron, two kinds of Shag, Bittern, Grebe, and many species of ocean straggler, every mainland Duck except the Wood Duck has been, during the last twenty-seven years, identified on its surface, the Grey Duck, the Mountain Duck, the Scaup, the Brown Teal, the White-eyed Duck, the Paradise Duck, and the Shoveller.



Scaup's Nest in Flax

The Scaup



THE SCAUP, the Grey Duck, the Mountain Duck, and the Brown Duck breed on the run. Although much reduced in numbers during the last quarter century, there still winter with us one or two considerable flocks of the first-mentioned species, perhaps in all 180 or 200 birds. About mid-August the majority of these Scaup leave the run, the remainder staying on the lake and breeding round its shores. Nowhere else on the run do they nest, and during my stay at Tutira I have never seen at any time of the year Scaup either in the open river beds or in the deep creeks.

This year, on September 10th, the largest flock still with us numbered 48 birds, and there may have been another 20 birds scattered about the different bays.

The Scaup's breeding season extends over many months, the first lot of little ducklings appearing last year on November 27th, and within a few days, several other broods, also just hatched, were noticed on the lake.

The last lot observed were a day or two old on March 7th, and on March 12th a pair were known to be sitting.

In early autumn they begin to reassemble from all quarters and reunite in one or two large flocks, spending the hours of daylight in deep water, and far from shore, and only at nightfall venturing into the shallows and raupo beds.

Four nests were obtained during last season, and from the first discovered, when deserted by the old birds, the eggs were taken, placed under a hen and duly hatched on November 27th.

The eggs, of a brownish olive green colour, and considerably polished, are large for the size of the duck, as big, in fact, as those of a Buff Orpington hen. They are slightly flattened at the blunt end, and average 1107 grains.

A second nest when found contained two addled eggs, and had just been vacated, the parents taking off with them seven young ducklings.

Within a couple of yards of this nest was built another holding eight fresh eggs. The fourth, taken on 4th of January, contained three addled eggs. The birds had just left it, their brood still hanging about the raupo in its immediate vicinity.

Although comparatively easy to locate the whereabouts of a Scaup's nest, its actual espial is by no means a simple matter.

Indeed, the bird almost seems to disdain concealment of herself, so much does she rely on the difficulties of the discovery of her nest. Often she can be seen openly leaving the lake edge and swimming straight out from shore. You may be sure she has just quitted her eggs, and after a few trials be almost equally sure of your failure to find them. The nest is buried among flax roots and fallen blades half supporting layers and layers of rubbish of ten, fifteen, and twenty years' accumulation.

Often the bird sits entirely covered, deep in this dark mat of rotting fibre, and with barely room to raise her head. The bolt holes are so narrow and perpendicular, and the runs so tortuous that no rabbit would ever willingly take refuge in a thicket so liable to be blocked. The Scaup sits, moreover, with extraordinary nerve. Before I spotted the third nest of the four found this season I had burrowed—corkscrewed—deep into years' accumulation of old flax, and had actually got my nose within a foot of the sitting Scaup. It was, indeed, the smooth shining horn of the bill that first drew my attention to the bird, motionless in the gloom beneath these mats of shredded fibre.

This duck allowed me to gently remove much of this half-rotten stuff, indeed, her head had become visible, and I was roughly focussing the position with a white handkerchief when at last she scrambled up her bolt hole, hustled along her narrow run, and presently splashed into the water.

Another nest I found by microscopically careful examination of the lake edge, at

first discovering a very indistinct trail from water to flax, then in the dark shade of masses of fallen blades, a fairly distinct passage free of all cobweb, winding beneath the dead stuff. I became more sure again, noting the traffic route, and especially where the birds had squeezed between a fork of manuka and an exposed flax root.

The discovery of an infinitesimal shred of brown down that could only have come from the covering of the eggs made me certain, and presently the glimpse of eggs was my reward. When the nest has been carefully covered by the Scaup before going off, discovery is even more difficult, as the brown down admirably matches the flax waste.

The proper gear for this kind of bird nesting is pickaxe, spade and lantern, the oldest possible rig-out, and a hat that can be glued to the skull like a cowl.

The little Scaup hatched out by our hens were tiny brown creatures with disproportionate feet, enormous for their body's size, and reminding one of children wearing their father's fishing brogues. They were

not particularly wild in the sense of being timid, but rather only perfectly indifferent to their foster hen, deliberately leaving her when the netting was removed, and not attempting to return, or even evincing any sense of being lost. None of them survived.

Next year I intend to place among any young Scaup hatched a duckling of domesticated breed. The wild birds might thus be induced to more quickly take to the strange food offered them, and would also, I think, more readily accept the alien mother.



Blue duck in Huikohau river.

The Mountain Duck



THE geographical formation of Tutira — conglomerate and limestone superposed on “papa”—is well suited to the “Blue,” or “Mountain Duck.” Throughout the centuries our streams have chafed through the harder limestone and deeply eaten into the soft clay rock. The more open and larger streams are full of immense limestone boulders borne down on land slips, the narrower gorges quite precipitous are mostly pebble paved, their little tumbling streams completely over-arched in parts with tutu, koromiko, and fern.

In many of these latter every stretch of three or four miles supports a pair of Blue Ducks, whilst in our largest stream, the Waikahau, there is a far larger carrying capacity, and several pair breed there

on a mile or two of water. This species lays early, and there must be many nests in August.

This season our first lot of ducklings were marked on September 27th—a brood of three or four—the young being then about a fortnight old. On October 1st another brood was seen about the same place. On October 8th some miles up the river I watched for long a family of four—ten days old. I daresay, the ducklings showing much white about front of throat and breast and side of face.

The glassy, cool, translucent stream enabled me to easily follow these little divers to its pebbly depths, their white markings showing very distinct as they explored the river floor or rose with a plop to the surface. Above water, too, they were equally active, skimming after flies on the surface and scrambling half out of water after insects on the damp cliffs. Again and again at a pool's tail I was sure the strong water-draw would suck them down, but they would cross it safely above the very break. Every now and again from the parents



Blue Duck's Nest under clump of Hill Flax.

would come the rattling note or the sibilant "whio," "whio," one of the most delightful sounds of wild nature in New Zealand.

The two old birds, while the ducklings played and dived and fed, floated motionless, or paddled slowly about the calm, unruffled surface, every now and then one of them in play making hostile feints at the other.

Above the great rock where I lay, a shining Cuckoo hawked for flies, a Warbler trilled at intervals in the tall manuka, and the shadows of great white clouds darkened in patches the whole country side.

On October 13th I got a nest just vacated. There was still one whole egg—addled—and a dead duckling half out of the shell, quite undecayed, and not even flyblown; the nest must have been tenanted within two or three hours of my discovery.

It was situated close to the Waikahau stream, and hidden under an immense rush bush on the very edge of a sandy cliff. There, cosy, warm, and dry, beneath this natural thatch, was the hollow containing the nest.

On the upper side of this ancient rush bush passed an almost imperceptible trail, which doubtless the duck would follow when entering her nest. Along it she would steal in the dim lights of morn and eve, and just opposite the nest fade herself away and disappear on to the beloved eggs.

On the river side, and just overhanging the cliff was the flight hole from the felted growths of rush. The duck would reach her eggs as I have suggested, by the trail, and leave them on the wing, dropping quietly into the pool below.

Round these eggs there was rather less down than is usually found about the eggs of the Scaup or Grey Duck.

The nest hollow was shallower, too, and close by it was another similar cavity, suggesting that possibly the male had spent part of the period of incubation in close proximity to his mate. Their cliff was of flood sand, built up in past years by the stream, and now again in process of demolition, and its composition just such as the Kingfisher also loves, velvet soft and warm. These Mountain Duck may use the



Blue Duck in Quiet Pool.

same nest in recurring years, for on the river brim, and directly beneath the nesting site, the tiny bits of broken eggshell that first drew my notice were of last year's eggs.

Immediately after leaving the nest, the young are very carefully hidden by day, and in our streams chance only discovers them.

In these boulder cumbered creeks there are endless harbours and refuges, ceilings of limestone, with only room for the birds to crouch on the water floor, potholes scooped by the action of sand and grit, hollows and arches gouged by the current's force, and everywhere along the banks thickets of water growth and hanging fern.

On October 15th a second Blue Duck's nest was got, and this one also was placed just about though not above high-level flood mark. Certain types of this river silt are apparently so great an attraction that the Mountain Duck will risk abnormal floods for its advantages.

These birds had chosen for cover a bush of mountain flax, and beneath old dead

blades and on the warm, sweet, moist river drift were deposited the four nearly fresh eggs.

The down about these eggs was largely mixed with particles of soft bark and fibre, perhaps inadvertently picked up in the daily uncoverings of the nest, or perhaps to eke out the rather scanty quantity of down. This nest was deserted, the duck having been badly frightened by the rabbitier's dog that flushed her.

After photography, however, the nest was left undisturbed for twenty-four hours, in the hope that the birds might yet return. The colour of Mountain Duck's eggs is pale brownish cream, and their average weight 1088 grains.

On October 29th I find in my diary another entry of Blue Duck marked on the same river reach as the three already mentioned.

This brood consisted of five birds almost full fledged. Four is about the average, perhaps, but three years ago on a forest stream some miles from the homestead there was one brood of six and another of nine.

On November 2nd we experienced for about the seventieth time seven how many a slip there is between cup and lip in this kind of photographic work.

Often and often have I gently driven for amusement or to show to friends some family of Mountain Ducks up or down stream to some convenient crossing or open reach. We did this on the 2nd, quite easily driving them down the creek and sweeping them from pool to pool till the selected spot was reached. Then, while the camera was being adjusted, an eye was kept on the parent birds, and we were satisfied from time to time with glimpses of them half hidden in the bastard flax that drooped into the stream. Alas! however, when all was complete, the young were gone, vanished! We never again saw them, and the parents only hung about the spot till they knew their brood was perfectly safe, when they, too, decamped.

Later, an examination of the opposite river bank, where we had forced the ducks to pause, proved that they had been blocked by ill luck exactly at one of their bank

refuges. The edges were quite paddled with trampling, and no doubt the young had escaped by some well-known run up the rough cliffs, and dropped again quietly into the stream above or below us.

A similar catastrophe all but occurred again a few days later. Another brood had been marked and gently drifted down stream to the chosen pool, yet even while the camera was being unpacked and fixed, the birds were gone. After long search, however, I found the two youngsters hidden between great limestone rocks, a strong stream breaking over them, and only their heads visible. It was not until my hands were upon them that any movement was made, then they splashed off, diving like frightened trout.

After their reappearance, however, there was no further attempt at concealment. They never again tried to escape by flight or by diving, and quietly allowed us to photograph them.

Although thus plentiful on the run, only twice, and each time after heavy southerly gales with rain, have Blue Ducks been



Blue Duck (two young in centre)

seen on the lake. They never, in fact, willingly leave the haunts peculiarly their own: the rushing shadowed creeks half blind with fern and koromiko. Dipping in summer's heat from the fern clad downs and terraces of pumice grit, often have I enjoyed the cool damp of his fern-hung gorge, and have paused long to watch him in his solitudes. The little waterfalls dash into diamonds on his slate blue plumes. He is thoroughly at home on the bubbling champagne pools. Where the swift stream shows each polished pebble clear he can paddle and steer with ease. When not thus occupied in getting his daily bread he and his mate will climb on to some rock islet, feet above the water, and there stand for hours on alternate legs, preening their feathers, stretching out their necks, and generally enjoying their *otium cum dignitate*. The Blue Duck's startled, sibilant whistle belongs to our New Zealand wilds as peculiarly as the Curlew's call to the moor and wasteland of the Old Country. On lands like Tutira, cut up into innumerable inaccessible gorges, the Mountain Duck is certain to survive.

The Grey Duck



CONSIDERING the comparatively large area of water on Tutira, the run breeds a very small number of Grey Duck. Even in winter only small parties stop for any length of time. Large mobs resting on the lake, when shooting is going on elsewhere, invariably leave after a few days. No doubt the food supply of this breed is scanty, owing to the absence of shallows in the lake.

During the breeding season, perhaps 15 or 20 couples haunt its edges, though their nests may be often at great distances from water. Besides these, a few clutches are hatched each season in the open riverbeds.

When, however, the whole number breeding on the place are counted, the result works out to a duck to each five hundred acres. As, moreover, a quarter of the run is



Grey Duck's Nest in Fern.

waste land, the chances are heavily against the discovery of many nests. Now and again, however, they are dropped upon. One nest found in January, 1909, not very far from the lake edge, and just off an open grassy ride between flax and fern, contained ten eggs of a dull yellowish green, much the hue of those of her domesticated cousins, except that the greenish tinge is more faint in the wild bird's eggs. In size the eggs of this Grey Duck were about two-thirds as large.

Unfortunately, I came on the bird very suddenly, and she flew off, badly scared, and without any time for concealment of her eggs.

From the great depth of this nest—fully six inches—when sitting she must have been completely hidden from all sides, and only her back and head visible from above. The six-inch sides were walls of down tightly compressed into a thick felt.

Hoping to photograph the bird herself, I set up that afternoon a rough preliminary screen, and as the eggs were much in-

cubated and as I was fearful of losing my chance. I may have erected it in too close proximity to the nest. At any rate next morning, when revisiting the spot, I found that the eggs had been thrown out of the nest on all sides, and its edges trampled and flat. The blunt breaks on the ruined eggs, and the presence of the whole clutch uneaten in any degree pointed to this destruction as having been the work of the duck herself.

No hawk, or rat, or weasel would have thus wantonly destroyed them. Had vermin been at work, most of the eggs would have been devoured, and one or two probably missing. The holes, also, would have been of different shapes and sizes.

During this past season another Grey Duck's nest was got, found accidentally by one of a party of scrubcutters. It was placed among fern nearly half a mile from the nearest water, and as the bird had returned after being put off, I had hopes of getting a picture of her sitting. To effect this it was necessary to clear away a good deal of fern in the foreground, and our work



River Scene with Blue Duck.

must have attracted the attention of a pair of Harriers in the neighbourhood. Anyway, when returning a couple of days later we found the clutch tumbled and devoured, the shells lying about and two eggs altogether gone. During the last twenty-eight years I do not think the Grey Duck has either increased or decreased on Tutira.

The Brown Duck



ANOTHER species of duck under the camera this year has been the Brown Duck. Of it one or two fairly successful studies have been got, the birds caught in characteristic attitudes on half submerged logs in deep shade. But although this tame little duck is far from uncommon on the run, his breeding habits are still quite unknown to me. On several occasions I have chanced on their broods, but when they nest and where they nest is still a mystery. Often during the past season have McLean and myself lain hidden at night about their feeding grounds, and heard the birds fly in to others already lurking there; we have never yet, however, found the nests.

The Brown Duck's flight is strong and rapid, yet these very birds, a few minutes

after alighting, would suffer us to get within three feet, bending over them in the dark as they lay in some tiny pool off the roadside. We could slowly follow them, too, as they moved a few feet ahead in single file across the dewy pasture.

The female is an excellent mother and can hardly be scared into desertion of her young. More than once I have caught the hen on some little pool, hidden in tall swamp growths, one, perhaps, of a chain of waterholes half overarched with *carex*, *raupo*, and *flax*.

The Brown Duck's note is extremely distinct and quite unlike that of any other breed.

When quietly floating in shaded waters and many of the birds together, the Brown Duck has a curious habit of sometimes striking the water violently. This apparently is done with its foot, and does not seem to be a signal of any sort, for after the considerable splash thus caused no excitement or suspicion was noticeable among the other members of the flock.

This season my acquaintance with the

Brown Duck began on October 13th. Returning late that night from watching for Blue Ducks, and riding past a marshy spot on the road, I noticed something skulking in front along the watertable. Flushed, it proved to be a Brown Duck, and had scarcely relit a few yards distant, when, with a great quacking another bird—one of three—flew down and joined company.

It was evident from their mutual excitement and interchange of greetings, that they were mates, and after waiting a little I rode home, arguing that there must be a nest in the vicinity, that the flushed bird must have been sitting, and that she had temporarily left a not very distant nest to feed.

Next day, however, systematic search revealed nothing, and twice later we were equally unsuccessful.

Each night we lay out, Brown Ducks, just after dark, could be heard coming to the marsh, but each night, also, other Brown Ducks were there before our arrival.



Brown Duck Resting in Shade.

Once or twice, searching for Rail's nests, I have fancied I heard Brown Ducks in the tall, wet raupo beds, and these birds may have had young with them. On the other hand, on January 1st, and weeks after that date, there were sixteen Brown Ducks, male and female, in mature plumage on the southern portion of Tutira lake. Of these a couple of pair seemed to be keeping to some extent apart, but the remainder flew together and swam together, as though flocked for the winter.

Each of these four kinds of duck has its own peculiar haunts and habits.

The Blue Duck will be found in the deep, cool gorges and rushing, bouldered streams, and nowhere else. The Brown Duck breeds probably near the little blind creeks that percolate rather than flow through the marsh lands. There during the daytime he quietly rests, or if on larger sheets of water, lurks until dusk in deep shadow and almost motionless. The Scaup seems to breed only on the lake's very edge, during the winter months to congregate in great flocks, to lie in deep

water during the daytime, and under no circumstances to visit the river beds. The Grey Duck's nesting sites are more diffuse: by lake edge, river brim, and far from water, even not very rarely on trees their eggs may be discovered. During the day they often rest on flat shore lands, or swim close along the raupo edge. No one of these breeds interferes with the other, nor do their nesting places overlap.



Male and Female Brown Duck.

The Kingfisher



ALTHOUGH in parts of the run distant from the policies three or four pairs of Kingfishers have always bred, it is only of late that they have begun in any numbers to frequent the homestead and house paddocks. In the earlier days of the station, the birds would arrive in late autumn and remain during the winter, all of them, however, until two years ago leaving us in spring time for various scattered breeding sites.

In 1908, however, one pair remained after the usual date of departure.

During early October we could see them flashing from tree to tree in the sunshine, or in the dewy mornings perched on the Stevenson screen and the rain gauge, apparently deep in meteorological calculations and scientific reflections, but really quite alive to mundane promptings and not

missing one chance in competition with Thrush and Blackbird for the early worm.

Later in the month, as they were still with us, I became certain they would nest, and watched the various banks and cuttings for the circular hole where claw marks on the lower edge denote the Kingfisher's breeding chamber. On this occasion, however, the choice of a nesting site fell on a half rotten willow knot, and presently their secret betrayed itself by the little yellow skee or slip of tunnelled wood-grain piled up against the knot's base.

This gnarled willow snag lay on the narrow strip of turf betwixt the lake shore and the public road, which here winds along its western edge, but neither riders, waggons, coaches, nor mobs of travelling stock seemed at all to scare the birds.

It is doubtful, indeed, if they were even noticed by the wayfaring public, and the precautions taken by the birds—the low warning note sounded upon the approach of riders and the care taken to lure them away along the road by short decoy flights—were probably quite unnecessary.



Young Kingfishers—shewing Nest in Sandbank.

Sitting birds may easily be scared from their nests, so it was not until the eggs were hatched that I ventured upon closer inspection; in fact, my first assurance that the smooth, very round, white eggs had changed into naked nestlings was gained by happening suddenly on one of the parents bearing a small inanga (I think) in its bill. We were scarcely five feet apart—for an instant face to face—the next the inanga was gone and the bird was regarding me with the brazen innocence of the school-child detected and who has swallowed his sweetie.

It was only upon a deeper knowledge of his worth that I could forgive the bird for the deceit thus attempted on a friend, and mentally afford him the more honourable similitude of the faithful pursuivant, who, rather than betray his sovereign's trust, swallows the incriminating document.

I may say here that these Kingfishers were my first attempt at bird photography, and that in addition to inexperience I had to contend with a shutter altogether too noisy.

I knew something of the habits of birds, but nothing of the camera's. For me the perfect instrument is not yet in the market, the camera that will give good results through cap. closed shutter and undrawn slide.

To this day a glow of joy pervades my frame, when, in the developing dish, the first faint image dawns upon the plate. Humbly I thank Heaven for its appearance there, and plume myself on not being such a very great idiot after all.

After the completing of a hiding place, it was my custom in the morning to walk down to this shelter with a companion, enter it quietly while he retired whistling ostentatiously, and otherwise taking care that the birds should notice his retirement.

Birds apparently cannot count, and this simple ruse was successful, but though it was easy enough to deceive the Kingfishers' sight, their sense of hearing could not tolerate the burr and click of the machine—one whole morning, indeed, was spent winding up and freeing the garrulous shutter to accustom them to the sound.

Finally I broke the birds in so thoroughly to the shutter, that it was accepted as normal, as one of the sounds of nature, the rustling of grasses, the patter of leaves, the lapping of water.

When our acquaintance began, the lizard season was at its height—the first brood being almost entirely reared on them. Later, lizards were practically “off” the bill of fare, and dragon flies “on”—lizards, say, during December; dragon flies during February. At any rate, lizards during the former month would supply the *piece de resistance*, and during the latter, dragon fly.

Cicada and locust were also served up from time to time, but rarely.

While the parent birds were still shy of my shelter, I used to notice that after one or two attempts at the nest—they would balk just like boys “funking” at high jump—the particular lizard carried during these unlucky attempts would be got rid of and another substituted. This, I could tell by the differing sizes of the little beasties. It was pathetic, indeed, to watch

these poor reptiles held always by the scruff of the neck—if scientifically lizards have necks—and with their toes—if they are toes—clearly defined against the light. They were very, very limp, too, for it is Kingfisher fashion to beat and batter his prey before presentation to the nestlings.

The Kingfisher's vocabulary does not seem to be voluminous—a jarring screech, not translatable into human spelling, always greeted my appearance from the tepee, and well expressed terror and rage. Cli-cli-cli, several times repeated, signified “safe now,” and always immediately after this note one of the parents would light on the knot, momentarily pause, and then, with a quick little run, enter the hole with supplies for the hungry garrison.

Then there was the low note of warning already mentioned, and another cry similar to that of rage, only lower in pitch and less harsh. It expressed caution, “All right I think,” from the male perched high on the broken cabbage tree; “All right? All right?” from the hen to encourage herself. Then the male would call again,



Kingfisher and Tailless Lizard.

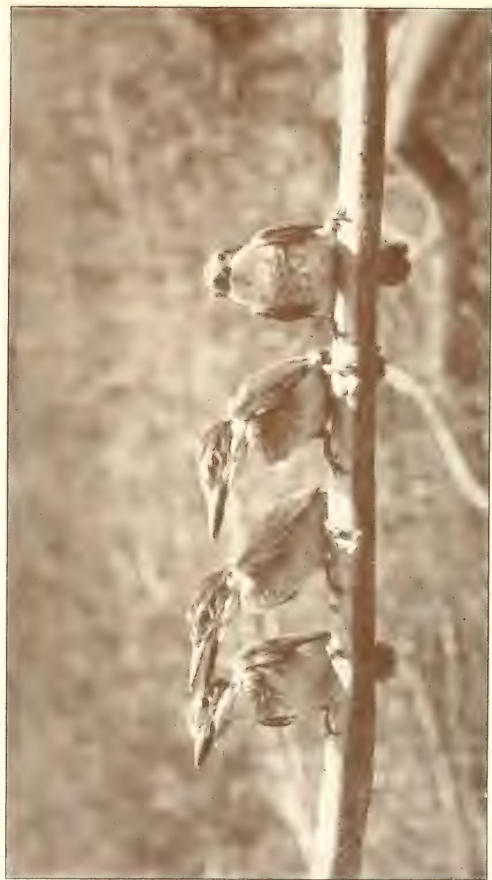
"All right! All right! But you try first" (just like a man!) and the hen would pitch within a yard of my head right on the log, hesitate, and her heart fail, perhaps, at the last moment, or perhaps she would successfully run the blockade, an action, when you came to consider it, really appalling to her imagination for as these Kingfishers always backed out tail foremost, there was the dreadful chance of being caught defenceless by the rump.

Then there were, besides, long, low-toned, earnest guttural conversations of "klue-e, klue-e, klue-e," repeated or exchanged again and again and again.

In emerging from the screen, my sudden reappearance must have been an amazement to the birds beyond any amazement experienced by Kingfishers since the world began, and no doubt when, as racial custom ordains, and the birds repair to winter quarters, these two will scandalise the respectable community with their tales. They will relate how a leafy cocoon grew up in two days near their willow snag, how their nest was investigated, yet spared.

how for hours a single unwinking Cyclopean eye would glare at their front door, how the four nestlings were taken out of their troglodytic home and placed in a row before the magic optic, how the strongest youngster, resenting the uncanny rite, flew fully thirty yards on his first flight, fell into the lake, and was rescued by a boat, how on two occasions their nesting hole was blocked at dusk, and other stories so much stranger than truth as to be indubitably false.

With a reverence for science—almost a passion it might be said for the screen and rain-gauge—it is sad to have to relate the Kingfisher's neglect of the elementary duties and decencies of life. The birds know neither how to keep a cleanly house or rear a mannerly family; in fact, the schoolboy's condensation of some work on savage life—manners none and customs beastly—would be strictly apposite to their housekeeping. The nest swarms with gentles, and from it there emanates a really noisome stench, the young sometimes sitting amongst



A Kingfisher Quartette.

food unconsumed and in the last stage of corruption.

It may here be added that owing to the tumultuous sanitary habits of the nestlings, close inspection of a Kingfisher's burrow is a highly adventurous method of learning wisdom.

Then the young birds quarrel without cessation from daylight to dark, hour by hour, girning like bad-tempered children, the squabble alternately dying to a drone and heightening to a twangling chorus of treble shrieks. The nestlings might be Jews' harps, loosely strung, and perpetually twanged. I imagine that in their dark chamber, when the bickerings have sunk to a sleepless drone, the least movement of a single bird awakens the savage circle again to recrimination. The young literally never stop quarrelling, girning when on their best behaviour, and screaming in sibilant chorus when at their worst. My experience with these wild Kingfishers bears out a friend's statement that they make the most greedy and most fierce of pets, fighting

incessantly, and even chewing off each others tail feathers.

At night neither parent stops in the breeding chamber. After dark, if their snag was jarred or shaken, the indignant nestlings used to twangle and hiss and shriek their loudest. If, however, the jarring continued, they would lapse into dead utter silence.

The winter habits of Kingfishers here at Tutira depend on weather conditions: cold spells will drive them coastwards, and they will return with warmer airs. Twice during the present winter this has occurred. Up to mid-June the whole ten seemed to be about the orchards and lawn, then on the night of the 13th the thermometer dropped to 31 degrees in the screen, and next morning apparently every bird was gone.

I was able to obtain several medium photographs from this nest, of the parents carrying in lizards and later in the season cicadas, and also one of the four full-fledged nestlings seated in a row on a willow stick.

As I have said, this pair and their numerous offspring hung about the policies during the winter, but as spring came on again, disappeared one by one, until at length, in September, only the original pair remained. On the fourth of the month they began to work on the old willow snag, their nesting site of the previous year.

It was now that I again and again regretted having tampered with the hole in order for purposes of photography to get out the four young nestlings.

The part removed, though carefully replaced and apparently secure, had during the winter shrunk and curled up, and the chamber itself was dank and damp, good enough still, perhaps, for vulgar Starlings and Minahs, but quite unfit for the fastidious Kingfisher.

The pair, now again thinking of nesting, were, I am convinced, identical with the birds of the previous season.

Readers will be convinced, too, when they hear of the sites attempted, sites no birds would have thought of not thoroughly

accustomed to man and broken to belief in him.

On September 4th, then, these Kingfishers were at work at the old original site. This was almost at once abandoned, and the birds then tunnelled in the same snag two other bores, each, alas, terminating in the old breeding chamber. There is practically no rotten timber on this part of the run, but I did get, after some trouble, a dry willow block at about the proper stage of decay, also two other logs, which, though rather waterlogged, I hoped might do. The first of these was securely wedged into a living willow's fork some five feet above the ground and within twenty yards of the original site in the willow snag. A narrow augur hole, slightly sloping upwards, was made, and the ejected wood grain allowed to be noticeably visible. About the same date one of the remaining logs was erected in a suitable position on the lawn, and the third was planted in a dry bank distant some half-mile across the lake.

Thereabouts, too, in the more suitable cliffs, augur holes were bored. These were,

however, left severely alone, the sand not being of the proper kind, not the velvet-soft, cool, yet not dry, powdery, yet not too free, flood drift of river banks.

The log wedged in the living willow's fork, however, proved suitable, and in a few days the birds had excavated a fine tunnel, judged by the amount of wood grain thrown out.

I now thought all was well, and gave little more thought to the matter, until I noticed Starlings in the vicinity.

Upon inspection, it was found that these aliens had dispossessed the Kingfishers of their new bore, and also seized upon the original site, the poor Kingfishers having, I found, humbly attempted still a third bore beneath the Starlings' nest in the latter. Both chambers were full of horrid willow twigs and vulgar feathers of the tame villatic fowl.

They were promptly pulled out, and for a day or two either myself or McLean lay hidden in the flax, and each Starling arriving was duly shot.

The Kingfishers, however, would not return to their new made hole, but almost at once again attempted the original snag, and again gave it up in despair.

My notes give the date of first work as September 4th. On the 15th they were tunnelling in the new log set up for them. On September 30th they were dispossessed by Starlings. On October 9th and 10th they attempted the log set up on the edge of the lawn.

This, it will be remembered, was another of the snags artifiically established some weeks previously. On the afternoon of the 10th the pair were very busy taking turns at their work, the bird not occupied seated on a low bough close to the log, while the other tunnelled hard and scraped out with its little feet the refuse wood. A couple of minutes was about the duration of each spell of work. Ruberoid had been wrapped partly round the block, but in spite of this—perhaps because of original damp not properly evaporated, or perhaps because of insufficient decay, the birds ceased work.

On October 15th I find noted in my diary, "Kingfishers in fowl run." In this most unromantic spot stood an old dead pine bole. On it the Kingfishers now started their bores, tearing off great sheets of its outer bark in their eager efforts to penetrate the rotten layer beneath. Here, in spite of the hen house door being five feet distant, in spite of the daily feeding of fowls and collection of eggs—the latter in itself surely an outrage on a wild bird's feelings—regardless, too, of the cow bail also within a few yards, the work of boring proceeded. Alas! here again conditions were unpropitious, the several tunnels all striking a hard inner rind of sound timber.

On November 1st my diary records, "Kingfishers still hanging about." The poor birds were restless and unsatisfied, evidently seeking everywhere for a suitable site and visiting, sometimes one and sometimes another of the discarded holes.

On November 16th they "left the homestead," moving some hundred yards away to the vicinity of the woolshed. Here in

turn they attempted one after another of the willows, some of these the oldest on the run and full of holes, though not the holes that Kingfishers would select unless hard pressed indeed.

On November 23rd I note, "Kingfishers again at original willow snag." On November 25th, "Boring again in fowl run."

On December 7th great flying to and fro and exultant screaming announced the fact that in the fowl run the old pine bole had fallen in the previous night's gale. The birds were evidently hopeful that all this splintered timber on the ground must surely mean a suitable yard or two of rotten wood.

On December 18th they were still about the homestead, still loath to desert the scene of their former successful incubations.

On January 10th and for some days afterwards both birds were again about the homestead. They were evidently not sitting. In early February they were still about the place. I believe, in fact, they did not breed during the season of 1909-1910. The seizure, therefore, of their



Kingfisher carrying Lizard.



Kingfisher with Cicada.

nesting site by the Starlings cost us locally eight young Kingfishers, for this strong, well-fed pair would have certainly again reared two broods of four. This ousting of the Kingfishers from their nesting site is just an instance of one of the minor perils our natives have now to adventure. Another is that they are driven by the pressure of foreign birds to sites not perfectly safe. Allusion has been made to the destruction by wind of the tree in the fowl yard. Another pair of Kingfishers this season in another part of the run suffered from a similar mishap, the birds themselves escaping, but the great pine bole selected for their breeding chamber being levelled with the ground. Though miles from any homestead, there, too, Minahs, Starlings, and Sparrows were in full possession of the best sites. I notice, furthermore, that during the last few seasons Minahs hereabouts at any rate have taken to eating dragon flies.

Like other native breeds, the Kingfisher has now to face a competition unknown before. On the other hand, I believe that anybody in the country who has a garden frequented in winter by Kingfishers, could

easily induce the birds to remain to breed. He would be well repaid by their beauty, the interest of the tunnelling operations, the varying calls of the birds, and the working of their commissariat department.

As has been told, each of the two artificial log sections placed in the vicinity of the original nest was attempted, each was explored and bored. The third block, too, was burrowed into, and almost certainly by another pair of birds.

These sites, I am convinced, were only not completely utilised because they were not exactly suitable, but next season, "if its de las' act," as Uncle Remus says, my Kingfishers shall have everything they require, blocks suitably decayed, three feet long by two in diameter, placed five or six feet above the ground, and sloped sufficiently to run off the rain. The logs shall, moreover, be augured three inches or so slightly upwards, and as a further precaution, capped and wrapped with ruberoid.*

NOTE.—Neither of the timber yards in Napier hold any stock of suitably decayed blocks of white pine, nor can they be had at the country sawmills. Sometimes in the Colonies the most necessary articles are not easily procurable.

Sites selected should be quite open and some three feet from the orifice of each and on a lower plane should be a stout perch, on which the birds can rest alternately during their burrowing operations. It will be serviceable, too, at a later period, when the parents are carrying in food, for the birds like to rest there a moment near the nest, before bidding daylight farewell and taking their plunge into darkness.

During the past season one other Kingfisher's nest was got, but too near the public road and at too great a distance from the homestead to admit of putting up a screen. It was built in a sandbank, and in it two nestlings were reared.

The Weka



IN the wet, undrained lands round about the lake are to be found, the Swamp Rail and the Marsh Rail, both species quite rare, but noticed now and again, especially after heavy floods, when the birds are drowned out of their seclusion. The Banded Rail is also a rare bird with us, and is only very occasionally flushed among the manuka and fern growth of dryer situations. Our fourth member of the Rail family, the Weka, is common, and as he, too, is protected, many pair stop about the homestead. In our garden during the winter months often there are two or more couples, and last year one particular bird would come up for worms thrown to him, and take quite a lively interest in gardening opera-

tions. Sometimes a pair will breed very near the homestead, but it is exceptional, and nearly all these semi-domesticated woodhens draw off about end of July to their wilds.

Then, also, the birds on the run begin to leave the flats where, during winter, an easier food supply has been obtainable, and to think of building about the heads of gullies and glades and open valleys.

About April we begin to see them again in the garden and orchard, and the approach of spring is once more the signal of retreat to higher ground and denser covert.

Wekas breed very early—or very late—it is hard to say which, when the birds are sitting in mid-June. One such nest was built near a bushman's camp and not long after the pitching of the tent a Weka appeared.

The premises having been reconnoitred and the scraps of potato and cold meat thrown out having been sampled, the bird disappeared for three days, returning then

with two others—no doubt hens. A nest was made in a clump of hill fern and eight eggs laid.

These, my friend declared, were all laid by one bird. Probably, however, he failed to distinguish the females, and the eggs were really a joint contribution to the treble partnership. This is the more likely as the Weka's relative, the Pukeko, often acts thus; moreover, eight is an improbable number of eggs for a single hen to lay even though stimulated by scraps of meat, potato, and the refuse of a camp.

On August 22nd another Weka's nest was dropped on by a contractor felling manuka. This nest, though substantially built, was unprotected above, save for the poor shade of spindly manuka.

On October 7th I had the luck to find two nests, neither of them, however, showing any character in their construction; one was on the edge of a patch of low white manuka, and from it one or two photographs were got. They show the three eggs, with their ground colour of dirty

white, blotched with large, faint, washed-out brown-purple markings.

The other nest found on October 7th was sheltered and hidden by old dead bracken, above which there was a growth of tall manuka. It also contained three eggs.

Believing that we should get more interesting nests later in the year, I did not attempt to photograph the birds, but “he “that will not when he may, when he “will he shall have ‘nay,’ ” and this we experienced with the Weka, obtaining no late nests in use.

Certainly five very characteristic nests were got afterwards, but only egg chips remained in them. One was on a dry limestone shelf sheltered by a huge projecting peak of the same rock. On this inner ledge the nest lay dry and warm, the egg chips half filtered through the soft, dry grasses. There the Weka must have sat secure, and in partial gloom, caused by the veil of pendent ferns on the outer rock. Three other nests were built beneath ancient clumps of hill rush and sheltered with a natural thatch of many inches depth and

of many years' accumulation. The fifth also was impervious to all weather, hollowed out against the very stem of a fern tree, whose dead, drooping fronds, slightly projecting and overlapping one another, hung to the very ground. By them the bird was protected from every drop of rain, and as effectually as by a shingle roof the rooms beneath.

The hill-rush nests had three exits to each; the nest built on the limestone shelf was less well off for escape, but was so perfectly hidden that perhaps the birds deemed a back door superfluous. They could moreover, if pressed, have leapt over the low edge.

The whereabouts of the Weka's nest is largely determined by the food supply of the vicinity, and in springtime, if a beast has been bogged or a fat sheep got trapped in an "under runner," it is quite worth searching for a nest in the neighbourhood.

Even after the flesh is no longer fit to eat, a great supply of maggots, beetles and grubs, attracted by the carrion, provide for Wekas an ample food supply.



Weka's Nest, with three eggs, in Whip Manuka

Weka chicks are very attractive little creatures, and in early life quite black. Like young Pukeko, they reach maturity very slowly, and probably it is only the earlier nesting birds that rear a second brood.

In his *Birds of New Zealand* Buller treats of the Weka at considerable length for the benefit of naturalists of a future day, who will, he says, "seek in vain for the birds themselves, and to whom, as we can readily imagine, every recorded particular will possess the same interest that now attaches to Leguat's rude account of the *Didine* bird of Rodriguez."

This lament, however, was certainly premature, if not altogether uncalled for, and a species so remarkable in the possession of ample wings which yet are incapable of flight from long disuse, is likely long to gratify the moralist.*

*NOTE.—The New Zealand Year Book of 1909 supplies the following figures in regard to the members of the many religious bodies in the Dominion:—Church of England, 368,065; Presbyterians, 203,597; Roman Catholics, 126,995, etc., etc. The pride of place in the first-mentioned Church may well be in part ascribed

On Tutira the numbers of the Weka fluctuate very considerably, and I have elsewhere described the two irruptions that have occurred on the run during my occupation. The species has, however, more than held its own during the last quarter century.

to the Weka. In theory, at any rate, he is the best-known bird of the Dominion; everybody has at least read of him, and the Anglican Church has peculiarly taken him to her bosom. None of her many imported curates can withstand him. He never fails to draw and to awaken, and no newly-arrived young Church of England divine's sermon can be considered quite complete without him. As surely as texts of a certain character are given out, we listen eagerly for the coming allusion. The bird is never, of course, named, but allowed to steal upon us perhaps as "a small brown bird, my brethren, whom all of us know," or, "my friends, one of our deeply interesting flightless species." The poor bird is then made to fulfil one, no doubt, of his purposes in the scheme of Nature, and is castigated as a decadent, and held up as an awful warning to the congregation. It is pleasant to believe that while Tutira, and no doubt other runs preserve, the honourable, numerical position of the Church of England is assured.



Male Frigate on Nest.

The Pukeko



THE Pukeko's nesting season, like that of the Weka, extends over many months, from August to March at least—and probably longer, for the cock birds may be seen sometimes in mid-April treading the hens. I have got eggs in August, and eggs this year were found on March 14th, while a newly-built nest was obtained in mid-June.

The earliest nest of the past season was found on August 30th, the bird still at work on its construction. On September 24th a pair had hatched their eggs, and on the 25th we got two birds sitting. After that no further note was taken of nests, for there are hundreds of Pukeko on the place, the result of years of protection. Roughly speaking, their typical nesting positions may be classified into three lots:

Firstly, there is the top of a niggerhead or huge rush bush, entirely open to the sky; secondly there is the type of nest placed at the base of flax clumps, niggerhead, or any suitable growth, and to some degree sheltered by overhanging greenery; and thirdly, there is the nest deep in the tall raupo growing on the edge and on the shallow promontories of the lake, and where for years no fires have burnt the mass of sere, brown, hollow-chambered blades. One nest in quite a unique position, built on a willow tree some two feet above the water was found by me in February of this year, but in all my experience of hundreds of Pukeko nests, I have seen no other, not placed in deep raupo, or on the very top of a niggerhead, or, lastly, at the base of a flax clump or rush bush. The construction of the nest is simple, and the material used such as can be most easily collected, dried or green grasses, raupo, carex, etc., shaped and rounded to the requirements of the birds.

It is easily found, for after a few days' incubation of the eggs, the adjacent vegeta-

tion is trampled into runs, especially if several birds share a nest. After incubation is over and while the young are still returning nightly to the nest, it is impossible for the most unobservant to pass the spot. The tussocks are flattened down for yards around, empty pipi shells are strewn about, and often there is a large heap of droppings where the birds have been in the habit of doing sentinel duty.

Sometimes a new nest, or rather platform, on a flattened niggerhead summit, is specially built for the nestlings, though this may, and probably does, only happen in a partnership nest, when, as the eggs hatch, each hen takes away her share of the chicks.

Possibly these are from her own eggs, for the first lot laid would be first hatched out and the earliest layer of the two or three hens would be least inclined to continue sitting. She would, therefore, by a sort of automatic process secure her own proper brood, unless, indeed the hens were laying simultaneously, which, however does not seem to usually happen from the time

elapsing between the chipping of the early and late eggs.

Where there are many eggs in a nest they can be readily sorted into two or three sets, each type no doubt marking the different hen.

Days elapse before all the eggs are gone, and not infrequently a bird will wait patiently on an addled egg, and I have sometimes wondered, in a case of this sort, if the older hens had palmed off this last remaining egg on their guileless mate, a young bird may be, sitting for the first time, encouraging her to stick to it for a bit longer, while they divided her share of the chicks.

I have known a Pukeko return to her rain-sodden nest and cold eggs after thirty-six hours' desertion. She had forsaken because of a screen put up too close, but after its removal had returned and again taken to the nest.

Contrary to what might have been expected, a big proportion of birds choosing the quite open type of nest, that built on the summits of niggerheads, bring out their

eggs. Most of these nests, no doubt, are partnership businesses, and one at least, if not more, of the firm are constantly prowling round, flicking their tails and uttering warnings to all whom it may concern. The more a Pukeko, especially a male is agitated, the more violent the tail action becomes, and as the excitement subsides, so does the signalling cease. The height of these nests, too, is some protection against marauders like rats or Wekas, and the prowling Harrier Hawks are repulsed and baffled.*

On one occasion I had been watching a cock Pukeko keeping watch and ward, as males do, and through my glasses trying to discover the whereabouts of his sitting mate. Just then a Harrier, flying low to the ground, dropped, or rather tumbled, so sudden was his action, on to the hen.

NOTE.—Weasels are very rare on Tutira, and this immunity may be accounted for by the very heavy storms that from time to time sweep the northern part of Hawke's Bay. Many of the aliens cannot stand these long-continued torrents, and during storms such as that of March-April (1910) when a total of 16.83 inches fell in three sequent days, Sparrows, Minahs, Quail and Hares are killed wholesale.

As suddenly, however, he was driven off, for while the hen defended herself, the plucky cock rushed to the rescue, and I could see a confusion of blue and brown. Then, again, the Harrier passed along, pretending he didn't care, and doubtless calling out as he flapped off, "I didn't want your old nest," trying to save his face, for ever so many little eyes were watching the scene, and birds hate disgrace and failure just as much as does mankind. Visiting the spot afterwards I found none of the eggs broken, though the many feathers scattered around attested the hard fought field.

Reverting, however, to the different types of nesting site, the second, built on or near the ground, and to some extent sheltered by greenery, is the most common on Tutira.

Quite a small minority of the birds patronise the dense raupo fringing the lake.

The most interesting details of Pukeko family life are, of course, gathered from nests under observation for photography, and during the past two seasons I have



Pukeko's Nest.

had up many permanent screens for this purpose.

One nest watched last year was built in one of the wettest parts of a wet swamp, just where several springs oozed forth, and where even in the height of summer no horse or cattle beast could venture. Indeed, the surface would hardly bear a man, and to prevent their subsidence the camera legs had to be placed on boards.

This particular nest for photographic purposes was really in too secluded a place, and the birds, though quite broken to the actual erection in front of their eggs, were timid of mankind.

Nests should be, if possible, selected, where the roar of traffic—or perhaps not quite that on Tutira!—has accustomed the bird to the ways of man, his ridings, his driven mobs of sheep and cattle, his barking dogs and himself perambulating this earth on his own two legs. This nest had been visited at intervals, my intention being to obtain the photos a few days before the eggs chipped and when the birds would be sitting hardest.

The date of hatching, however, I had miscalculated by ever so little, for upon reaching the nest, there were two tiny living chicks among the eggs, only an hour or so hatched out.

Pukeko chicks are from their birth clothed along the spinal and other tracts with silver tipped blackish down, the crowns of their little heads are of a pinky baldness, their great mouths when open of a faint blood red hue, their beaks pink, too, and even when only a few hours old, they make great play about the nest, backwatering with their absurd semaphore wings, also pink and nearly nude. They are, in fact, as grotesque little creatures as it is possible to imagine.

These two were so very lately hatched that the parental alarm notes failed to convey a meaning. In haste, therefore, I removed the false camera and replaced it with the genuine article, for I knew at any moment the chicks' developing senses might wake them to danger, and that then the youngsters would instantly tumble out of the nest.



"Budge" drying himself.



"Budge" and Chick.

The old birds, far too little acquainted with mankind, were very suspicious, and circumperambulated my conning tower until I felt that at any moment it might collapse like the walls of Jericho.

The male at times would execute a war dance in front of the camera, hopping up from the ground, suddenly flapping or clapping his wings together and screaming. The birds had detected either the small differences between the false and real lens, or else heard me, though I hardly dared breathe, much less move. A bad screen is bad economy in the long run, for good work cannot be done in very great discomfort, and I was penned in a two by three bamboo screen like Cardinal Balue in the torture cage of his own invention, unable to lie down, sit, or stand.

I have committed crimes in my life I know. Who hasn't? But I believe expiation may have been accomplished during those hours of anguish, kneeling on a waterproof and slowly sinking into the ooze. Perhaps in the last great drafting, when St. Peter races off the just—whom I take to

be those who protect their native birds—I may be there hoping to get on some improved kinematograph, films of the *Notornis*, Colenso's Coot and the mysterious *Megapode* of the Kermadec Islands, all yet surviving in the Elysian fields.

However, to return to our subject. After a little the male became somewhat bolder and though evidently still uneasy, began to slowly approach the nest. Every moment I expected to see him settle down, when to my disgust the nestlings were one by one ravished from my sight, and I could only observe the male at intervals appearing and reappearing behind the nest, which was now used against me as a shelter and shield. Finding the repeated signals disregarded, he had probably taken them down in his beak or claw, or, of course it is also possible that even while I waited the instincts of the chicks had developed to the point of interpretation of the parental calls.

There is little doubt, anyway, that the old birds must on occasion pick up the young either in beak or claw, for the

platforms built for chicks seceding from the original nest, and already mentioned, are often too steep for the little creatures to crawl up. I have, moreover, seen an old bird supporting in his claw a chick when feeding it in a precarious position. After the sudden disappearance of the two young ones I could see the parent birds moving about the vicinity of the nest and hear them rustling softly in the raupo, their high, querulous notes running through the whole gamut of interrogation.

There were other calls, too, one a low croon, another the gentle call to feed—"Te-he-he-he," "te-he-he-he"—and a third remarkable noise rather than call, at its height like grinding, and which I took to be the bird milling food for the young, and at its lowest just the snore a retriever makes when fetching a hurt hare after a long chase and breathing entirely through his nostrils. I was confirmed in my theory of the milling or grinding of food, for a few hours later, on handling the chicks, their droppings seemed to be composed of

the tender blanched blades of young raupo in a highly desiccated state.

Twice leaving my screen on this unfortunate day I put back the chicks, and twice again were they removed, and although in the end photographs were obtained, they were of no account. The fact is that one should never expect to get results from a first sitting. There are a score of details you cannot know. Often a Pukeko, for instance, will enter its nest almost flat on its belly, crawling in, and with half a dozen raupo blades borne along on its back. Then almost at once, often, the bird may start to reweave a bower above its eggs, pulling and tugging while on the nest at the adjacent blades and stems.

The second Pukeko's nest, closely watched, was under observation during October, 1909. Our tent was pitched in an open bit of swamp directly in front of the nest, but at many yards' distance, and this distance was reduced a yard or two at a time, until we had got within eighteen or twenty feet.

After that we ventured to cut away a certain amount of the superfluous greenery



"Budge" Feeding the Little Ones.

shutting out the nest from the camera. All work of this sort, it need scarcely be said, should be done gradually, especially under conditions where human traffic is conspicuous, as for instance in a swamp where it is impossible to work without treading surrounding vegetation into pulp.

This nest also was in a quagmire, where we always sat in gum boots, and to prevent the camera legs from sinking, they had to be supported on broad boards.

The nest was a partnership affair, though we saw little of the hens, who were giddy young things, and left the cock to do all the heavy work. "You do de haulin', Brer Fox, and I'll do de gruntin'," seems to be quite the hen Pukeko's idea of a fair division of labour.

As the camera and tent crept up nearer and nearer, it was he who brought them up again and again, and attempted to induce them to sit, and when they would not, it was he himself who sat and panted in the sun, who braved the lens' awful eye, and who re-wove from raupo and grasses a shelter for the nest.

Not only would the hens not sit themselves, but they made his life a burden by constant false alarms. Sometimes when he had really settled on the nest, and when the agitated flick of his tail was subsiding, there would be a violent dive into the thick, crinkly raupo beside him, or a sudden squawk immediately behind. Then, when they had done what they could to thoroughly discompose his mind, they would glide off, and for hours leave the poor fellow to possible danger and certain discomfort. Certainly among this species the male is the bolder bird in incubation. I may say indeed, that the hens would not front the lens. This particular cock was in glorious plumage, and we admired him also for his grit. A married friend, however, to whom I related the circumstances, suggested that we were giving the cock too much credit altogether, for dangerous as might be the proximity of the lens, and uncomfortable as might be the rays of the sun, yet there in the nest he was alone and free for a time at any rate from the worries of domestic life. The eggs laid in this nest



"Budge, Jill and Quintus."

were of dissimilar types, rounder and smaller, or darker in colour and more pyriform.

The third nest under the camera was found on January 22nd. Placed in a willow and a couple of feet above the lake, the intercrossing of several boughs served for a base, the outer layers of the nest were composed of half-dry willow weepers, broken into short lengths, while inside it was lined with raupo blades. By chance I had come across it whilst searching late on a gloomy afternoon for Brown Ducks. Willow growths almost completely hid the sitting bird, the dark water admirably matching his deep blue plumage, and it was his red head that first attracted close attention. This danger the old bird must have been fully aware of, for as I leant over the deep water, peering into the greenery from my position on a broken limb, he, too, drooped his head lower and lower towards the water, and away from me, until he sat at an extraordinary angle in the nest. From subsequent observations I became convinced that this conduct was

not the result of chance, but that the bird appreciated the danger of his coloured head.

Twice that evening and afterwards I had the pleasure of witnessing a repetition of the original performance, the bird again drooping his head into shelter and shuffling himself back in the nest, till it seemed likely that he would slide completely off it. Never before had I known an instance of quite the same kind, so that this cock Pukeko's comprehension of the danger lurking in his crown seemed most interesting.*

The nest was found, as has been said, on January 22nd, but other work was in hand, and it was not until January 26th that we dragged a boat across "The Gut" dividing in summer the upper from the

NOTE.—During September, 1910, whilst one afternoon riding along the edge of the lake I noticed, as did also my companion, a Pukeko again perform this action. We were upon him almost before he knew of us, and not choosing to fly, he crouched down, and although his head, of course, was lower than his back, he took the further precaution of submerging his bill, thus blending himself more completely into the water background. From the angle at which his head was held—not stretched out, but rather dug down into the water—I again cannot but think that the bird was fully conscious of his danger signal of red.

lower part of Tutira lake. The nest, built over very deep water, contained nine eggs. By February 1st another egg had been added; hatching began February 5th, and continued till 13th. On the 14th the nest was deserted, and only a single egg left, which contained a nearly fully developed chick.

Pukekos are often rather clumsy in leaving their nests. McLean one day noticed an egg knocked out of the nest, and on a second occasion I heard one fall with a plop into the water. Whatever the male and the other female felt in this latter case, the guilty hen herself treated it with the utmost *sang froid*. She let it go, like Bailey Junior, the crockery at Todgers, with perfect good breeding, and never added to the painful emotions of the company by exhibiting the least regret.

No doubt both these eggs were upset by the startled and more timid hens, for in this case, too, the cock was left to take the risks. Neither sex, however, can be said to sit close, the birds usually preferring to glide off while the intruder is still at a

distance. Last year, certainly, I caught a bird fairly asleep on its nest, but such cases are very rare.

When on one occasion at work on this willow tree nest, and about to slip into the blind, there were a pair of new hatched chicks among the eggs. They were old enough, however, for prompt obedience, and at a call from one of the old birds, instantly tumbled out of the nest into the water below and swam off.

As the chicks hatched, they left the nest, and I have taken photos of the cock still sitting while on each side of me was a hen wandering about the shore with one or more cheepers. When once the cock was "set" in his nest, and if he saw nothing, no noise, no shouting, sibilation or hand clapping would scare him off. To get him to move it was necessary to appear over the top of the blind like a jack-in-the box.

Young Pukekos are extremely hardy little creatures, and this year, intending to rear them as pets, I took five from a nest from which they had spilt themselves as I rode by.

They were, I daresay, some twenty to forty hours old. As I then believed that a hen would not feed them, for the little creatures are accustomed to be nourished directly from the mother's bill, they were kept warm in flannels, and porridge and milk ladled out to them from the blunt end of a nib.

Even then, at that age, and under these adverse conditions, they survived, until one day their bowl was upset and all but three escaped out of an open door, never to be seen again. The survivors were given then to a hen, and when she clucked and broke up food, it sometimes happened that the stuff would stick to her bill, and thus gradually was a connection established between her call and a supply of food.

The Pukeko chicks were put under her late in the evening, and I am told her expression of startled astonishment when they began to pipe and cheep was very ludicrous. Of the three surviving the accident to the bowl, a pair thrived and seemed to be in a fair way of growing up, until the smaller suddenly dropped dead one day

in the garden. I believe the poor bird must have swallowed a pin or tack or something of that kind, for they would both experiment on all manner of strange foods.

Three more chicks were brought in at a later date by one of the station children. They were at once given to a hen, and have thrived splendidly. "Budget," the survivor of the first brood, is perfectly tame, and ever since his arrival has been a joy and amusement to the whole household. A baby Pukeko is indeed the oddest little creature, grovelling on his belly when approached, shivering his pinky half-bald head from side to side, his strange nude winglets outspread and backwatering, his eyes turned upwards like a Saint in a picture, and his great red lined mouth open like a fern owl's. His is the abject submission offered by heathen votaries to a remorseless god.*

When rather older, and in the act of taking food eagerly from the hand, his

[*Or, say, the attitude of the sheepfarmer requesting a further loan from his Banker with fleece wool at 4d. in London, and fat stock a drug on the market.]

head is zigzagged from side to side, like a snake about to strike. At length a dart is made and the morsel snatched and eagerly devoured.

It is strange, also, to see at so early an age the use made of the claw or "foot," the morsel being held tightly between the "thumb" and other "fingers." The arrival of the three new chicks brought out quite unexpected traits in Budget's character. He was then about eleven weeks old, and during his whole life had never ceased his perpetual, plaintive call when wandering about and feeding himself. His foster mother was in her coop, and he had no one to tell him the dangers of such a habit to little Pukekos, and what a summons it was to vermin. When the three new chicks arrived, beyond touching their little heads with his bill, and feeling them gently, Budget at first evinced but little interest. These chicks were at that time netted into a very small run until they took to their new mother, a staid old Buff Orpington.

In a few days they were allowed full freedom—the hen still penned in her coop

—and would then sometimes wander from her cover and follow Budget in a desultory sort of way. About the third day, to our amazement he began to feed them, and ever since has been a most devoted nurse. His is a real labour of love, for when called up and given a caterpillar or other dainty, he runs off at once and presents it to one of the chicks. Should it be too large, his bill is used for its crushing and maceration, or sometimes the morsel is held in his claw and torn up for the little ones. His lonely cry, too, ceased altogether, and was replaced by the gentle feeding note that calls up the cheepers. This latter cry, by the way, was not developed at once. At first Budget always carried food to the chicks, but later he expected them to come to him, though such is the dear fellow's love for his small charges that he can suffer no long delay, and should anything prevent their immediate appearance, will still carry to one of them, the blue hopper moth, the spindley daddy-long-legs, or the slimy, succulent caterpillar. Even when we know him to be hungry it



Male Pukeko sitting.

is never himself who is first fed, and the distribution of the chopped meat Pukekos love is a quaint spectacle.

One of us presents it bit by bit to Budget, who duly passes it on to one or another of his little troop till they are gorged, standing round the dish replete, like sated cobras, and their small tummies tight as very drums.

“Budget!” “Budget!” will always fetch him running across the lawn with his funny rolling gait; an outstretched palm he knows means some dainty for his little ones, and we are careful never to deceive him.

He enjoys his bath many times a day, wallowing and splashing in his milk dish, and always, after ablutions are over, leaving the water with a skip and series of short hops. After preening his feathers, should there be sun, he spreads his wings to the full, making them slope to the very ground from an angle above his back.

Should a cloud pass over the sky he folds his wings, and proceeds with his perambulations in search of food. With the

reappearance of the sun, and when again it shines forth, instantly he whips round and expands his wings to get the fullest heat. "When in doubt have a bath" is the family motto of the Pukeko tribe. It is Budget's balm of consolation, when he has been gently requested not to cuddle down on my best herbaceous clumps, solace when he has been badly startled by the stooping pigeons, the crowning mercy after a full meal; in fact, like tobacco, it is a lone Pukeko's companion, a bachelor Pukeko's friend, a hungry Pukeko's food, a sad Pukeko's cordial, a wakeful Pukeko's sleep, a chilly Pukeko's fire.

He still allows one beloved friend to catch and put him to bed, crouching the while in the long grass, and wagging his dear old head from side to side as if in remonstrance.* He does not like the coop, still necessary for his safety, and knows

NOTE.—One good turn deserves another, and Budget at a later date returned to this particular friend a small torquoise brooch missed and given up for lost. The bird had no doubt picked it up, attracted by the colour of the stones, and was, when observed, standing near the fowlhouse gate with the brooch in its bill.



Male Pukeko coming on to Nest.

shutting up time as well as a beggar knows his dish or a dog knows when he is to be washed. Wandering away and hiding, he will then even leave his precious chicks to get into the long grasses and have the open sky above him. The night calls him, the heavy autumn damps mean all sorts of things to him, I daresay, squatting on his hocks, his immense feet hidden beneath his breast. He longs to feel the delicious dew bead on his back, to smell the breathing mists, to know the water-laden leaves are bending down and down to kindly hide him more and more in the dark till the trickle runs and they nod and rise. Instincts a thousandfold more ancient than this love of a day for his little brethren summon him. He longs to hear what his forebears have heard, the raupo chafing in the slightest stir of winds, the alternate babble and hush of the waterfalls on the far hill sides, the falling of wet leaves in the early light; to drink the morning dew by passing the long grass blades through his shining beak, or after frost to listen entranced as the cold-curved blades of flax

unroll and tinkle down their myriad shining films of ice.

Surely if country life can be so absorbing to those of us who love it, we can understand the passion for absolute freedom amongst the wild creatures who know the meaning of a thousand scents and sounds quite meaningless to us.

Sometimes during the day Budget can be seen in his favourite squatting attitude, nestling down in a thick border of white pinks or other cosy growth, the little ones mimicing his actions and lying alongside like tenders beside an ocean liner.

After witnessing in intimate detail the happiness and goodness—yes, goodness—of some of these birds, their affection for one another and helpfulness, a milk of human kindness, overflowing in dear Budget's case, even to the stodgy old Buff Orpington hen, who warms his nestlings at night and is shamelessly deserted by them during the daytime. After, I say, witnessing the intimacies of their lives, shooting of these particular species is no longer conceivable. I find myself sympathising with the collies

who must worry, but have still compunction towards the flocks they have so often worked and worry far afield and neighbour's sheep whom they do not know.

This is the particular instance to which I refer. One afternoon, at feeding time, Budget had, as usual, gorged his little ones; he was then presented, in the hope he would himself eat, with a good lump of bread. With it in his bill, he ran off, leaving his chicks, dipped it in his water pan—a very common custom among Pukekos—and carried it to the old hen. There, poking his head through the bars of the coop, the bread was offered with the ludicrous grovelling attitudes alluded to already. The imprisoned matron, though evidently from her stiff and stately gait regarding the offer as an unwarrantable liberty—they had, perhaps, never been properly introduced!—merely overlooked it as a lamentable want of society manners that only a Pukeko would be guilty of, and poor Budget's kind, emotional eagerness was completely disregarded!

Every country place in New Zealand, where there are children, should rear a

family of Pukeko. They are delightful pets, and pets, moreover, in absolute freedom who will assert themselves and not be content to tamely starve like the wretched guinea pigs, canaries, and rabbits of our youth.

What a life was that of the rabbit of boyhood's days, embraced, forgotten, remembered with remorse, more cruel still, crammed with dank meadow grass, long, rank, poisonous, grown in deepest shade!

By mid-April Budget was a very handsome bird in her smooth blue plumage, yellowish-red legs and cherry-red frontal plate or beak. She—we believe her to be a lady—with her three companions—"Toddy," "Jack," and "Gill"—all grew up to be fine specimens, and when the younger ones were able to fly, they were gradually weaned from their early quarters among the flower beds, and made to understand that the garden was tapu.

Pukekos are no respectors of shrubs and flowers, and trample the former with their great feet and tear up the latter with their



" Budge."

powerful beaks, even seeming to have a special pleasure in experimenting on the rarer plants.

The birds soon took to their new quarters and learnt that where the hens could go they, too, were undisturbed.

The close proximity of the fowls was at first a great attraction, and it was amusing to watch the younger birds grovelling before some quite phlegmatic old hen or chased by a fowl indignant at the heathen adulation offered her. "Toddy," "Jack," and "Gill" were often indeed hunted and pretty severely handled. Budget never got into any bad scrape, but with superior wisdom soon learnt to discriminate. The timid fowls she bullied; on one occasion an utterly cowed hen was rescued from beneath a pile of firewood, Budget standing sentinel over her and ready again to pull her feathers out on the first attempt at escape. Towards the bolder Orpingtons, and especially towards the roosters, her attitude was more respectful, and upon their approach she would retire to her coign of vantage, the honeysuckle

hedge, along the top of which there is now a well-marked path. Not that numbers would always intimidate her; indeed, she would challenge the whole fowlyard, roosters included, when she was outside and they securely penned within their run, and would wage a war, at once safe in results and honourable to herself in numerical disproportion. It was curious to watch these engagements, the fowls partly curious, partly fascinated, and wholly indignant, crowding and jostling against one side of their wire netting run, and Budget on the other in all sorts of bellicose postures, and thus the tide of battle would surge up and down the fence for an hour at a time. Pukekos, when becoming angry, raise their wings and tail, and puff out the white undertail coverts, and the attitude of challenge is to stand as nearly as possible upside down, the tip of the beak lowered to the very ground, the tail pointing straight to the sky, and the feet swiftly marking time. like an angry woman's hands clenching and unclenching when prepared to tear out a rival's eyes.



Pukeko sitting on Eggs.

We have noticed in Budget this attitude of defiance displayed also to ourselves. When sparring in play they will strike at each other's breasts with their outstretched feet, much in the same manner that cocks engage. We have had to be very strict about Budget's "followers," and she is under no circumstances allowed to meet them on the lawn or garden.

"Toddy," "Jack," and "Gill" have gone, and in a way their disappearance is a relief, for hosts of other Pukekos, their friends, were descending upon us, nearly forty coming down in a body one afternoon from the terrace lands above the house.

Budget still remains, retiring every evening to her roost in the raupo, and every morning returning to her friends, and home, and honeysuckle hedge.

Pukekos are very human pets, and do, I believe, really care for their friends, apart from material considerations. "Gill," for instance, loved to be taken up and have her head and neck tickled, and would cuddle

herself down in the keeping of her particular friend, tucking up her long legs, closing her immense feet, and lying folded up like a pocket foot rule. They will come to call, and even if not hailed will follow their friends for notice and recognition, and no doubt all these birds would have been even tamer had it not been necessary to scare them from the house, the verandah and the garden.

This long screed concerning the Pukeko may end with a few rough notes of his feathering. Budget, with the other four, was a day or two old when taken from the nest on January 10th; he was then like all youthful Pukekos, covered with silver-tipped blue down, thickest in certain tracts, especially round the head and down the spine. On February 21st incipient quills were first noticed, and the faintest shades of blue. During March he acquired the grey belly patch, his snowy under tail coverts showed, his tail feathers were two inches long, his frontal shield and legs were, however, still only tinged with red.



Young Harriers.

The Harrier

“**N**OT up to much,” and “a bad lot,” are in human parlance, the positive and comparative, whilst “a bad egg” is the superlative of condemnation.

“The bad egg” will commit actions so very low and dreadful that it has not been thought necessary to forbid them. Murder of babes by babes and desertion of tender youth by their parents are crimes too monstrous to anticipate.

The Harrier is a “bad egg,” a poor low coward, a terror only to deformed creatures and weaklings, fit to glean roast lizards after a fern fire, to tear out the eyes from cast sheep, and mean enough to gorge himself with carrion from the yards.

I accuse him of fratricide even in the nest, and worst of all, the lowest form of cowardice, a craven fear that will inexcus-

ably sacrifice his nestlings' welfare and lives to his own wretched carcase. He is a disgrace to his honourable family and different, indeed, to his gallant little cousin, the Falcon, a gentleman from beak to talon tip. Harriers are fairly plentiful on Tutira, and begin to lay in the early days of October. This year, while photographing Fern Birds on the 23rd of that month, we noticed a pair of Harriers circling and wheeling, evidently above their nest.

Knowing, however, the character of the species, and wishing to run no risks of desertion, the site was not actually visited until November 3rd. The nest was built on tangled fern growth of six or seven years, and the eggs, four in number and of a dirty dead white colour, lay on dried grasses and rush, amongst which were scattered a few feathers, big and little.

They hatched out shortly afterwards, and a preliminary screen at a short distance, and made of the surrounding scrub, was hastily run up when the youngest nestling was about four days old.

The greatest care was taken in no way to scare the parents, and owing to a sharp little eminence fortunately providing a stance from which the nest could be well viewed, its immediate surroundings were neither touched nor trodden.

Neither McLean or myself were ever within nine feet of the nest, and, as I have said, the herbage around was untouched. We, moreover, always left the vicinity immediately on the completion of any necessary work, and in the open country the Harriers could not but have witnessed our departure.

Nevertheless, these birds deserted their nestlings, for on the 10th, when McLean went to move the break nearer, the chicks were dead.

Now, as these Harriers must have circled above their offspring, and seen them, not as eggs, mind you, but sprawling in the nest, moreover, probably also heard them calling, this desertion argues an almost incredible heartlessness. During the second week in November I got another Harrier's nest. It was built in a swamp of very tall

raupo, where last season a pair of Harriers hatched out one brood successfully and attempted a second. Harriers sit very close and though I almost stumbled on the bird, I barely allowed myself a glance at the nest, and came away at once. Indeed, I believe that with shy species, unless you have actually exchanged glances with the sitting bird and she knows you have her secret, it is judicious to gradually wander off as if still unenlightened. Birds see so much and notice everything.

At long intervals the briefest of glimpses were taken at this second nest, and it was not until the 9th of December, when the young, two in number were sitting up—baby Harriers spend a great part of their time in this attitude—and about fifteen or seventeen days old, that siege operations were begun. The nest, supported on dense masses of dry, dead raupo, was by this time flattened into a broad stage by the traffic of the old birds and the movements of the nestlings. The latter were densely clothed in very short, pale, furry-looking down, and when sitting up, much resembled



Young Harriers Quarrelling.

teddy bears, formidably mouthed and beaked.

On the 10th manuka poles, hidden by the tall reeds, were erected a few yards from the nest, and cross pieces lashed to them. Next day raupo, in an upright, natural position, was thickly fastened on to these, and finally the sham camera put into position.

So far all had gone well, and throughout these various operations the Harrier continued to sit. We now had to clear the raupo between the lens and nest.

This was done as quickly as possible, and after finding the focus and fixing up the real camera, an instant retreat was made. All was now ready, and about eight the following morning I took up my position in the raupo shell, but after several hours' bootless waiting, had to give it up, and came away, thinking the birds extraordinarily shy certainly, but suspecting nothing more.

I believed then that the Harriers must be feeding their young late in the evening or early in the morning, while yet there was not light enough for photography, and

when, consequently, neither of us were upon the spot. On that assumption, and fearing that, perhaps, we were keeping the nestlings hungry during the hours of daylight, a good gorge of raw meat was provided them.

Next morning the young seemed fit and well, and we still believed they must have been fed at dawn or dusk, for it seemed out of all reckoning that the old Harriers should have abandoned their young, still alive and strong, and conspicuously visible.

Later, we came to the conclusion that after the sitting bird had been scared by the passage made through the raupo for the lens, neither it nor its mate had ever returned, that neither full sight of the young, nor hearing of their whistle calls had been of any avail.

During the two mornings spent in watching the young my suspicions as to their criminal propensities were confirmed. Very often in a Harrier's nest at the beginning there may be three or four or five young. I have got as many as six eggs. Out of these three or four or five,



Harrier's Nest in Raupo Swamp.

two — usually two — leave the wicked nest. What becomes of the smaller, later hatched nestlings? I believe they are torn to pieces and devoured by the larger chicks. On some occasion, perhaps when parental delay in supply of food has sharpened the appetites of all, the youngest and most feeble is taken. The next youngest is then devoured, and so the horrid tale proceeds until but three are left. The third chick probably suffers from a combined attack of the biggest pair, batten on their nest fellows and oldest of the brood.

There were but two in this nest under observation in December—there had been four or five eggs—and though they had been gorged with raw meat to the very throat late in the afternoon, there were the following morning quarrels so violent that I expected to see a tragedy enacted before my very eyes. One of these surviving nestlings was considerably the larger, but the smaller, fiercer chick was the more strong. The second day the larger was weakening, and the smaller bird very nearly got him down on several occasions, seizing

him by the head and hanging on as turkeys do.

This smaller chick I imagined to be calculating on his fellow's ebbing strength with the hideous interest of the cannibal convict in Marcus Clarke's story.

It is hardly necessary to repeat again that both McLean and myself were then still under the impression that the nestlings must be receiving supplies at dawn and dusk while we were absent.

Even when we removed the camera and gear, giving up all hope of securing negatives from this nest, we were not perfectly certain of its desertion, for the Harriers still hung about the vicinity.

All doubt, however ceased when we found the young fallen from the nest and dead.



Falcon creeping on to Young.

The Falcon

IT is a relief to have done with the Harrier and to turn to his relative, the gallant little Falcon. Each season five or six pairs build on the run, mostly far back along the high ranges or on the fern-clad conglomerate country. The nests are miles apart, for the Falcon brooks no rival in his own domain, and will chase the Harrier out of his sky, hunt the shepherd's collies back to their master's heels, and attack even man himself.

In attempting to focus a nest, I have had my hat knocked off again and again; in fact, was unable to proceed without a companion, who defended us both by manuka poles held above our heads. The birds strike with the breast, I think, and give a severe cuff rather than a blow.

The male—the smaller bird—is the more swift, the more fierce, the more silent, but

not the more agitated or devoted, and I have known the hen stand by her eggs or little chicks, guarding them against an intruder only five yards distant—this, moreover, on a first interview.

When accustomed to myself and the camera, I have taken exposures without any kind of screen, and at a distance of about twenty feet. Even on his autumn and winter hunting grounds, and long after the time has gone for defence of young or protection of nest, he will pass unconcernedly in strong, level flight but a few feet distant.

At all times his joy is to pursue and attack the Harrier, who, when pressed, turns over in the air, and, lying on his back, stretches up in defence his sharp and terrible talons.

One pair of Falcons—I suppose the same birds—used a cliff site for many successive seasons, but this return to an old site, or even its immediate vicinity, is in my experience, quite exceptional. The eggs are laid on the spot chosen; if at the base of a conglomerate cliff, then on the ferruginous

pebbles, which, by the bye, they exactly match; if on a limestone ledge or platform, then among the trodden fern fronds and grasses, which make a softer layer for them; if on a wind blown pumice scoop on the ranges, then among the bare, dry, grey grit.

Quite other sites are, however, more rarely chosen, for one of the shepherds found a nest built by the birds themselves on a low gnarled tutu bush jutting out from a little cliff, or rather slip of papa rock.

The New Zealand Pipit seems to be the species most often taken by the Falcon, but on the pinnacles where the birds perch are often scattered feathers of Goldfinch and Yellow Hammer. No doubt other species also supply the Falcon's larder, and I have seen the bird strike and carry off one of a flock of Starlings, and also noticed a Quail chick brought into the nest. On this occasion the Falcon—the male—was still suspicious of the screen, and passed several times to and fro, transferring the Quail in mid-air, and in full flight, from beak to talon, and again from talon to beak.

It was an action of extraordinary neatness, and executed with acrobatic exactitude. After a short time, probably finding that he would not approach her, the hen flew off her nest and took it from him.

It is not to be thought, however that a pale of desolation reigns round about the Falcon's nest.

From different coverts used by me on different nests could be heard the Warbler trilling, the Fantail creaking, and the calls of Thrush, Quail, Waxeye, Blackbird, Lark, Redpole, and Chaffinch. All these species seem to dwell in the dangerous vicinity of the Falcon, as folk camp serenely on the slopes of a volcano slumbering, but which may at any moment break out afresh; or it may be that, like station colliers who have taken to worrying, the Falcon prefers to do his killing far afield.

The eggs, two, or less frequently, three in number, are so thickly peppered and sprinkled with red as to quite obscure the ground colour. The young Falcon, when first hatched are covered with white down, as their age increases it changes to grey



Hen Falcon Sitting.

and is not altogether gone when flight is first attempted. Even when there are three eggs my experience has been that they usually hatch out, but in that case out of the three nestlings one is distinctly smallest.

Often, however, there are but two chicks, one considerably the larger, and probably the female.

During the season of 1908-1909 I had a Falcon's nest under observation at the base of a conglomerate cliff on the pumaceous lands. Tall manuka poles supported against the pebbly wall made a capital lean-to, round them scrim was wrapped, and finally brushwood piled on top.

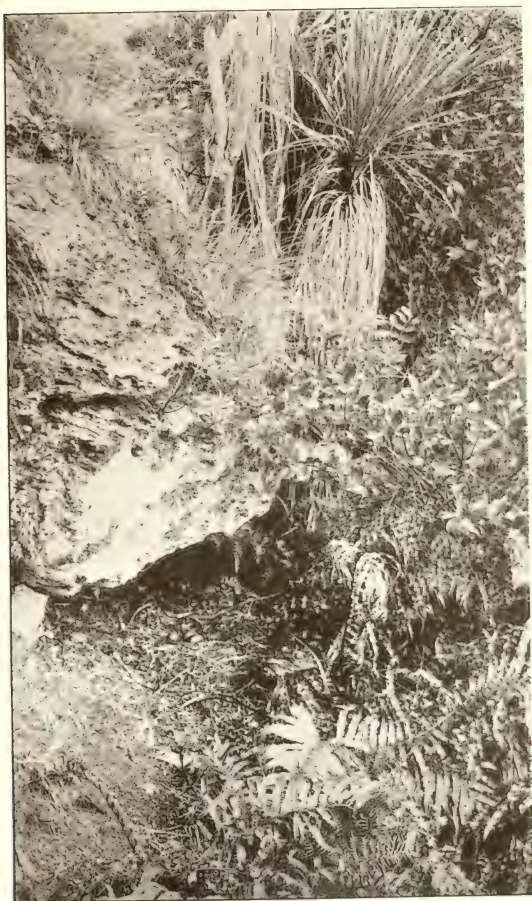
Thus, within two or three yards of the nest the most intimate details of Falcon family life was open to me.

Everything that is good can be said of their housekeeping—the little ones are admirably brought up. There is no quarrelling, except, sometimes indeed at meal times, no snatching at food is tolerated, even though the young may be whining with excitement and hunger. With their eyes fixed on the prey beneath the parent's

outstretched talon, they keep their distance. When the chicks are tiny amorphous creatures, the prey is torn up and fed to them. Later it is dangled in the beak and the young are encouraged to grow fierce and rush up and seize it. When much older that is no longer necessary, and upon the given signal, *laissez aller*, instantly the youngsters throw themselves upon it.

Always, however, after the parent bird's arrival there is a pause—grace before meat as it were—and this rule the chicks, however hungry, never attempt to transgress. Besides manners, probably the weightier matters of the law are not neglected and justice administered impartially.

On one occasion I saw the male come in with food, which, after the usual pause for grace, was annexed by the larger chick, and after a few protests from the other, was devoured in a corner. It had been barely finished when the female falcon swooped from the sky and lit on the edge with another dead bird, and this dead bird I noticed was purposely kept away from the chick just fed and deliberately held out



Falcon's Nest.

to and given to the other. After waiting, as Falcons do, with open mouth for a few moments, she turned and flew off. She was hardly out of sight when the well-fed and larger chick seized on the fresh prey too. But this time the little fellow was not going to lose his dinner, and a terrible squealing and tugging ensued, during which the little chap was dragged about like the weaker side in a tug-of-war.

Help was at hand, for almost at once the mother bird, probably not altogether unaccustomed to such bickerings, had returned. Taking the morsel from the offender, who at once gave way, she tore it up for the little fellow, feeding him from her bill till every morsel had been eaten.

The effect of a full meal on the youngsters is very curious, acting upon them as does a glass of champagne on a man, and causing the little creatures to strut up and down their platform, with bellies distended and the very air of the typical Irishman trailing his coat and spoiling for a fight.

As with the Kingfishers, supplies brought

up, and, owing to fear of the screen, not at once given to the young, are either dropped or eaten by the purveyors themselves.

While still mindful of the screen, one parent would watch, screaming out a yell of maniacal laughter at my least movement, while the other hunted. When their suspicions were lulled, both left the vicinity of the nest and were often away for considerable periods. It was really beautiful to see the love of that wild, fierce mother for her young. Often after she had been hunting unsuccessfully for a time and had no food to bring, she would swoop down for an instant and visit her twin treasures. She seemed unable to keep away for any length of time while within reasonable distance of them, but must still return only once again to have one other glimpse. In every way the most tender care is lavished on the young; when the sun grows too hot for their tender skins, the mother bird will remove them into shade, lifting them in that wonderful beak and carrying them one by one to shelter, just as a bitch



Expectant.

will move her pups. The youngest chick was always first taken. On one occasion I had knotted a string on to one of the nestlings to mark him, and was reminded next visit of the fact by finding the string on the nest evidently untied by the hen Falcon.

When advancing to shelter the nestlings, she "creeps," or "glides," or "pushes" on to them—each word would describe the curious action—and at any rate first covers them with her breast, not her wings.

The young spend a lot of their time snoozing; then there is the constant occupation of getting rid of the black blowflies who *are* so tickly, and *will* clamber about their fluff, and *will not* go away.

Then they play, too, venturing out from their ledge as toddling children do from an open door, pretending suddenly to be scared, and hopping back with great celerity. Great fits of yawning, too, or more probably some Falcon Sandow exercise, overcome them at times, and for a minute at a time they will stand gaping and swallowing till their jaws must ache.

Whilst hunting, should one of the old birds high in air pass over the site of the nest little notice is taken, but the long whistle signalling the approach of food rouses the youngsters from their play or sleep, and they rush at once to their platform edge. There they remain, gazing into the sky and cowering and flinching in sympathy with the flying shadow that swings from the dropping hawk. With hardly a sound she sweeps on to the ledge, and then, as always, comes to the young that trying grace before meat. She stands with outstretched talon, pressing down her prey, and during this tantalising pause, the nestlings' eyes seem to be starting from their heads, and they whine with hunger and excitement. Their gaze is rivetted on the ground, but they never offer to stir an inch until permission is given and the capture dangled from her beak.

Supplies were brought in quite irregularly, of course, but averaging, I daresay, about once in every ninety minutes. The youngsters in this nest, however, were three-quarters grown, and would require a pro-



Feeding Time.



Young Falcon.

proportionately good supply. As the nestlings develop they begin to wander, and long before fit for flight have ventured yards away from the original site, hopping and scrambling with great agility. For several weeks, and long after becoming fully fledged they are still tended, and probably partly fed by the old birds.

The young, when molested, throw themselves upon their backs and strike fiercely with their talons, uttering the while a yelling Mephistophelian laughter. The beak is not at first used in defence; it is still too soft, but the claws of a half-grown Falcon will start blood.

Probably not many Falcon's nests are taken, and probably, too, not many broods destroyed. The eyries are often inaccessible, and the parent birds too fierce and devoted to allow the approach of vermin.

Even to them, however accidents do occur, and this season a brood under observation, when about half-grown, were destroyed. At first I believed it to have been the work of a neighbour's rabbit, for in my diary I find the brief, vindictive

note, "Add repeating rifle to photographic gear!" I was wrong, however, for later, when photographing Tuis in the same locality, we came across, and on more than one occasion, evidently the same pair of Falcon. The three nestlings must have been destroyed during their parents' absence, and probably by some wandering wild cat. This pair did not attempt a second nest, and I believe under normal conditions the Falcon breeds but once a year.



Nest of Ground Lark.

The Ground Lark



HERE are several species on the run that may be called homestead birds, such as the New Zealand Pipit, or Ground Lark, the Waxeye, the Warbler, and the Fantail. A specimen or two of each of these breeds may be nearly always noticed about the gardens or orchards or plantations. Each is attracted by his special desire, the Pipit by dug soils, the Waxeye and Warbler by green fly on the rose beds, and caterpillars on the flower borders, and the Fantail by tree and shrub growth, and in mid-winter especially by the blossoming gums that then yield a plenteous supply of small moths and insects. Nearly every day the New Zealand Pipit may be seen, the little grey, brown bird that half of us think is an English skylark, and the other half fail to

notice at all, yet if any feathered creature may claim particular recognition, it is surely he who is not one bird but four. With us in the Antipodes he takes the place of four British species, the Skylark, the Wagtail, the Flycatcher, and the Robin Redbreast.

He does mount, and he does sing, even though he cannot be said to soar, or thrill us with profuse strains of unpremeditated art, but he himself and his four brown eggs and simple nest are modelled on the Skylark's as nearly as may be, the nest perhaps, a trifle deeper, the eggs practically indistinguishable. Although, however, he cannot sing against the British bird, what Skylark was ever so friendly, so sociable, and so ready always for the game of running with quick little steps along the winding tracks, rising with a merry chirp and a short flight, again and again and again beguiling the loneliness of the shepherd's ride. Then, again, where would you find the Skylark that could obtain amusement from a railway train—a New Zealand railway train?

Yet Buller writes that he has noticed on the Hastings-Napier line and elsewhere a peculiar habit the birds have developed of following a train, and has seen in autumn a flight of a hundred birds keeping abreast or a little ahead of a train in rapid motion.*

On the open riverbed—the deep, dark, fern-fringed gorge offers no attraction to this bird of liberty and light—our little friend becomes the Wagtail, fluttering and hopping on the weed-wrapt stones that emerge from a falling stream at the tail of some quiet pool. On the ebb and flow marked river rim he runs with tail in perpetual motion, and rising again and again with short, jerky flights into the air.

NOTE.—There is no good reason to suppose that these trains have materially lessened their speed since Buller penned his paragraph some thirty years ago. We have, therefore, the registered observation that the Ground Lark is able not only to keep abreast, but “even a little ahead of the train.” Much controversy is at present taking place over the speed of bird flight, and Gätke, in his *Birds of Heligoland*, credits the Hooded Crow with 108 miles, the Northern Blue-throat with 180 miles, and the Virginian Plover with 212 miles per hour, while here in New Zealand we know from what Buller says, that the Ground Lark can keep abreast “or even a little ahead of trains on the Napier-Hastings line,” and “in rapid motion,” too—marvellous.

Often, too, on the coastal lagoons you may notice him passing lightly over the estuarine mud, delicately picking up flies and tiny insects, as much a Wagtail in his flights and runs and sudden changes as any Ground Lark can be. Then, as the Flycatcher, he may be seen hawking by the hour from some high chosen perch, perhaps the top of some tall fire-charred, broken bole, or may be he has selected some little eminence on a sharp ridged spur, where his view is fully clear, and where the snap of his mandibles, his airy convolutions and sudden excursions, turn him into the Flycatcher.

Metamorphosised again into the Robin Redbreast, he will do his share, too, in garden work, keeping just out of hoe and rake reach, and picking up with short, deft runs, the white, soft, sleepy, disinterred larvae of the green beetle. Often and often when gardening have I had one or two of these cheerful little companions, quite friendly but never overbold, and always wearing that veil of shyness so peculiarly their own. Never would the Ground Lark wear the abstracted, distraught look of an



Ground Lark Nestlings.

English Robin, never would he be guilty of such discourtesy as to sit, as does the Redbreast, like a stone, until he darts on his worm, showing thereby that the worm and not your companionship is his real object. My little brown friend would never do that, each of us gives a happiest interpretation to the other's presence. Though incidentally the turned-over soil may be used later for other purposes, I am there now, the Pipit persuades himself, to provide him those soft-shelled grubs, as white and pathetically helpless as babies. Seeing me lonely at my work, I know he wishes me to believe that he has arrived with his cheerful chirp and ceaseless runs and flutterings, to charm the solitude, make the sun brighter, and the sky more blue. Mutual courtesy is always observed, on my part no too quick motion or sudden throwing down of tools, on his, an exit lingering and reluctant, for his departure, too, is like him, little runs and pauses that carry him further and further, as if breaking the sorrow to me, and when at last he is no longer there I realise the old French proverb

and know that of the two parties in our affection it is I who have given my heart, whilst the bird only consents to be loved. He is gone, and part of the morning brightness with him!

The Pipit's breeding season extends over many months of the year. Eggs are laid early in August, and I have noticed parent birds still collecting food at the end of March. Probably the early breeding pairs rear a second brood, but nests are more plentiful, I think, in late summer and early autumn than in spring, and this would seem to show that some couples breed but once and then late in the season. This year, certainly, we got two nests in the autumn for every one in the early months.

Almost any spot unlikely to be trodden by stock serves for a nesting site, very steep banks and almost precipitous hill slopes are favourite places, but nests are often built on the flats, beneath a sheltering tuft of tussock, or where a friendly stick or sturdy fern frond will fend off grazing beasts. Sometimes the Pipit has built even in the trampled, stock-trodden, house pad-

dock, and has, moreover, on several occasions hatched out her brood. The nest is a very deep cup, and much resembles the nest of the Home Lark. There are usually four eggs, rather pointed, brown all over, with a ring of deeper brown at the thicker end.

The young are fed on caterpillars, grasshoppers, and small flies, and one pair under observation seemed to have a little freehold property of their own, a clearly defined area for collection of these supplies, returning again and again to particular runs of rock and sandy flat. When the bill is full—birds can hold their captured booty whilst still continuing to collect, just as they can sing with their mouths full—the old bird would fly off to the nest, always, however, avoiding a direct flight and pausing many times en route for observation and critical inspection of the neighbourhood. Upon the arrival of food, the young, at any rate during their last few days in the nest, seem to be unable to forbear an eager twittering and chirping, sounds of rejoicing which must be highly

dangerous, and by which the particular nest under the camera this season was actually discovered. Although silence is thus in the later days of incubation neglected by the hungry youngsters, the golden rule for Ground Lark nestlings, their first and greatest of commandments, is never transgressed. However hungry, nay, voracious, the fledglings are, and at first for several hours in the nest under observation, the parent Pipits avoided the screen and camera, the young never budge from the nest, and though easily able to do so, never edge on to the little run and platform made by the repeated visits of the old birds. I suppose inherited experience has shown the Pipit race how full the world is of deceit and wickedness in the form of Harriers, rats, and other vermin. On Tutira during my time the numbers of the Ground Lark have very much increased and hundreds of them flock together in the winter months, especially on the pumaceous areas of the run.



Ground Lark about to Feed Young.

The Fantail



Of the smaller species that live about the station policies, the Fantail, our second small homesteader, is equally fearless and sociable. Tree growth and shelter it is that brings him to the station. The garden itself contains little of interest to the Fantail, the herbaceous borders must appear wasted labour, and the green lawn of no account. He is a flycatcher first and foremost, a worshipper of woods and groves, happy in summer amongst his native bush, whilst in late winter the alien bluegums are a particular attraction. On calm July mornings parties of Fantails gather about their blossoming tops, fluttering and turning, diving and rising, and performing a hundred airy turns and somersaults in pursuit of their prey.

Never almost is he to be found at rest, for even perched on a bough, he cannot remain quite still, but will sidle along its length, jumping from side to side drooping his wings to their full stretch, or trailing and scraping them like a gobbling Bubbly-jock.

The little bird never remains for any time in the air, always after an instant or two alighting, before again he flutters off. Although, however, of so mercurial a temperament and though so peculiarly a bird of the air, sometimes he is still and sometimes his little claws touch earth. Usually he takes small account of strangers near his nest, yet on occasion I have seen him still as a statue, crouched up and glowering almost as if prepared to dash forth in defence. Then in late spring sometimes I have watched him on the ground, hopping about and feeding on a little moth sheltering among the withered fronds of water polypod. Often it is a sheltered glade that holds him, where the wind hardly blows, where shadows have their edges soft, and grasses droop at



Fantail's Nest, showing Tail.



Fantail's Nest in Manuka.

noon over undried dews, or at an early hour on the sunny side of a clump of Mahoe, he will be catching flies, while still the sward is silver mist, and while yet the skies are of paler blue. In summer he loves to hunt above the limestone runnels that trickle and drop from pool to terraced pool, deep in the sombre shade of groves of manuka.

Quite in the open, too, over the bubbled brooks, and just above their sheltering fringe of overarching growth, he flutters and flits in the fullest sun, dancing like a gnat or ranging at random like a wandering butterfly. In winter hundreds and hundreds of Fantails move from the uplands in a vertical migration towards Tutira lake, there to regale themselves during the cold weeks on the copious water insect crop.

It is not uncommon during the winter days to have a Fantail enter the house by an open door or window, returning morning after morning to hunt for house flies, fluttering round the cornices, perching on the pictures, neither courting attention or

shunning it, perfectly unconcerned and at home. This fairy of the bush, however frail and fragile in appearance, is really a hardy little creature, and will weather storms that kill off some of the alien species in scores.

I have seen him hunting for flies in downpours of torrential rain, when the boles of the great pines were waterpipes, and from the patter and splash of the big drops a gritty mist arose throughout the forest undergrowth.

The cup nest is sometimes securely woven on to the top of some naked bough, and balances there, bare and exposed, or it may rest in a fork, or again be snugly slung beneath some sheltering branch. Sometimes the nest is deeply lined with the fluff of raupo heads, at other times with hair or wool or soft particles of shredded grass. The exterior is made to match its particular surroundings, with mosses, particles of decaying wood, and lichens. These are neatly smoothed off and bound with spider web, keeping all trim and taut, and acting as a sort of hair net.



Fantail's Nest.

Sometimes a tapering tail of mixed lichen and grass and wool is added, the idea perhaps borrowed from the pendent "old man's beard" that, yards in length, swings from the tawa boughs.

But with all this thought and care to match the surroundings properly, the Fantail fails to tidy up, and shreds of web and wool are left thick on the branches on the building route, and often betray the nest.

In manuka scrub it is always worth looking for a Fantail's nest beneath any dense lateral branch. I have known the curl of a broad flax blade act throughout incubation at once as umbrella and parasol. Birds feel the sun heat very soon and when the sheltering boughs about a nest are temporarily tied back, the sitting bird at once begins to pant; manifestations of discomfort are even more apparent in the young.

Many Fantails' nests this season have been under observation, several of them actually under the camera, and others seen

day by day, whilst at work on the nests of other species.

Fantails breed at least during six months of the year, for during this 1909-1910 season I have noted in my diary the earliest nest in August, the latest in February.

The birds sit so close that not infrequently they can be stroked on their nests, and when on one occasion this season the sitting bird had to be moved, she suffered herself to be lifted off, clutching her tiny claws into the nest and holding on like a broody hen.

Sometimes almost no notice seems to be taken of the camera; at other times the birds are more suspicious, in this, as in other matters, each pair having its own particular idiosyncrasies. Sometimes the branch holding the nest has to be cut down and lowered—afterwards, of course, to be carefully replaced. On one occasion, when this had been done, one of the birds returned, and not finding the nest in its proper place, began to show all the signs of violent rage, scolding, and creaking and



Fantail.

tearing and tugging at the manuka like a very termagant.

In this particular case, as a matter of fact, she again took to her nest, where the full brood was hatched out and reared, but I have since wondered if I then witnessed, though perhaps in a minor degree, one of those fits of blind passion or jealousy that cause a bird to throw out and destroy its own eggs.

The early nests are built with comparative leisure, but the late in very great haste and finished in a day or two. A nest discovered late in January, with only the rudiments of its base begun at 10 a.m., was practically complete by the afternoon of the following day, the Fantails then putting on the finishing touches and binding the edges with web. This nest contained but a single egg. Probably the Fantail rears on occasion three broods, for little time is allowed to elapse between the abandonment of the grown brood and the construction of another nest, and I have seen members of the former brood still supplicating food from one of a pair just about to take its

place on a nest containing four fresh eggs. The young are fed on all sorts of small insects, caterpillars, moths, etc., and apparently have, like the young of the Waxeye and Warbler, the power of ejection of their indigestible parts. These little dry pellets I have noticed about the edges of the nest, or resting on the growths below. The droppings are, of course, at first removed by the parents, and later ejected by the half-grown birds themselves.

Immediately after vacation of the nest, to which, I believe, they never return, the young birds continue for a short time in the company of their parents, who train them to hunt while still continuing to supply food. They roost together at night, and the young may be seen at earliest dawn, sitting in a row on some convenient bough, cuddled together like little Love Birds.



Fantail.

The Waxeye



DEBOUCHING on to the flat upon which the Tutira house is built is one minature gorge and several smaller valleys, or dens, each sheltering its own trickle stream. Yet these insignificant rivulets it is that have created the flat, for in winter rains, and when the hill sides are slipping, avalanches of mud and water are carried down and stones, weighing hundredweights, rolled for scores of yards. One great slip in the nineties came down close to the house, filled all the open drains, washed through the stockyard into the garden and tennis court, and even inundated the back room of the house with its mud puddle of fine silt. These valleys, as far as possible, have been allowed to remain unspoiled and uncut and to act as bird sanctuaries. Resident

always in them are several small species, the Waxeye, Fantail, and Warbler, with, so to say, the wilderness behind them into which they can at any time retire.

Out of these wilds, pairs and parties of Waxeyes are constantly coming down to the gardens and orchards. In spring one of the attractions is the green fly, and during the breeding season the Waxeye gathers from the flower beds a rich harvest of caterpillars for his nestlings in the neighbouring scrub.

The breed is plentiful on the run, though varying much in numbers from year to year. Last season, for instance, they were very plentiful, this comparatively scarce.

In August, and before pairing, they go about in flocks on the run, and may often be seen on the hill side fuchsias, whose leafless branches seem then to be stirred into sentient life. Perhaps in a single tree one or two score may be hanging like animated fruit in a hundred strange and varying attitudes. A continuous merry twitter proceeds whilst they gather honey from the bells of glaucous blue.



Nest of Wax-eye in Manuka Bush.



Sanitation of Nest.

The Waxeye breeds a month or six weeks later than the Fantail, and it is not till October that the tiny nest may be discovered in a trail of native bramble flung on a lacebark or manuka sapling, or cunningly hidden on the edge of a patch of low scrub or dense bracken, and for choice suspended over water.

The two or three delicate eggs of pale blue hang in the frailest looking fairy basket imaginable, a diaphanous cradle, woven on to frond or branchlet, and stirred by every breath of wind. The nest, though so slight in appearance, is really sufficiently strong, and is firmly fastened on to the supporting bough with web and wool, and lined with long, pliable bents and horsehair; for further ornamentation it is striped and crossed with fresh faded leaves of soft meadow grass, their pale pilose surfaces, flat on the exterior, blending exquisitely with the bluish cocoon wool and grey spider web.

At a later stage many of the nests hang quite awry. Although perfectly secure, the parents do not seem to have allowed for

the fledglings' growing weight. The nest is tilted, and has lost its earlier eminently trim and dainty appearance. On Tutira the Waxeye's nest is always cup shaped, and it seems to me a very remarkable fact that those I have got from about the Taupo district were noticeably different and distinctly boat shaped.

These little Waxeyes, when paired, show great affection for each other, stroking and preening one another's feathers, and cuddling together on the bough.

During the eighties the species increased largely in numbers. They then used to roost in large flocks among the fern and often at dawn, when mustering sheep, have I startled them from repose. At the very peep of dawn, too, whilst waiting for the sheep to gather, and meanwhile amusing myself by watching and listening to the birds have I heard them, deep hidden in the dewy tutu, singing what can be only termed a whisper song, its notes so very soft and low as to be inaudible at even a few feet. Although not quite so courageous as the Fantail, the Waxeye, too, is a good



Male and Female Wax-eye.

photographic subject. His movements, for one thing, are much more easily caught, and the parent bird's incessant feeding of the young gives many opportunities. When the youngsters are but a few days old, one or other of the parents is practically always on the nest. The parents then take it in turn to sit, the cock bird sounding forth his coming and whistling off his wife, and he in his turn vacating the nest when she arrives with supplies. The young are fed with moths, spiders, caterpillars, etc., all crushed and dead. They are fed fairly, as far as can be judged, but probably the strongest and hungriest gets rather more than its rightful portion.

After placing, or rather stuffing in the morsel to a nestling's mouth it is sometimes found to be too large, and whilst the body of it has gone, the long legs or wings still project like antennae. This condition of things is then considered judiciously for a moment by the feeding parent, and the morsel often withdrawn and given to a hungrier or larger mouthed child. Meanwhile the unlucky loser still continues to

gape and quiver in expectancy, persevering in vain long after his nestfellow has swallowed the mouthful and settled down.

At the least shake of the bough supporting the nest, up go all the long necks, and all the mouths are opened wide, but it is strange to mark the little family's discrimination between a shiver of wind and the light tread of parent bird.

Nearly always after feeding is over, and before the old bird departs, a dropping is deposited by one of the young on the very edge of the nest. The old bird, who has awaited the event, carries it off in its bill. If by accident, however, the sac containing the deposit has been broken or torn, the contents are still gathered into the bill, and very careful search made in all parts of the nest for the least bit of matter that would cause harm. By the Waxeye these droppings are got rid of at a few yards from the nest, and quite at random.

The young, whilst being fed, stretch forth their long necks with a sort of rotatory motion, working their naked wings, too,



Wax-eye feeding nestlings.



"Nothing More."

and shivering with eagerness. During rain one of the parents sits with wings outspread over the nest, and in this ingenious manner keeps the nestlings dry and warm. The young are also carefully sheltered from the heat, and most particularly when quite naked and flabby. Even from a distance it is easy to tell the age of the young, the sitting bird acting as a sort of animated barometer. With eggs or squab young you hardly see her back, a week later you can notice her sides, and a day or two before the nestlings fly she is fairly hoisted up by their growth.

The Waxeye's nest may be had between October and January, and probably earlier and later.

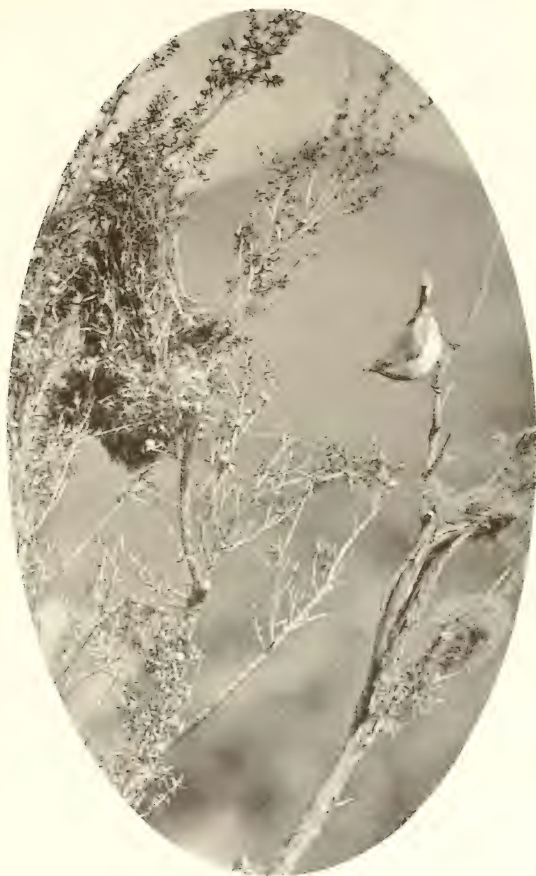
The Warbler



OUR most perfect winter and early spring weather comes when the wind blows directly off the snow-clad Ruahine Range, the nights are frosty, the days are still, the lake a sheet of glass, the blue sky cloudless. During weather such as this in early August, everywhere on the run may be heard the long, tremulous trill of the Warbler, rather a cricket's cry than a bird's.

Presently, from some manuka thicket, a sombre plumaged little bird will emerge, light on some topmost twig, and pour forth to three-quarters of the globe—for in his ecstacy he nearly sings a circle—this faint sweet trill that heralds fuller spring.

Although a plentiful species on the run, even in winter the Warbler's presence about the homestead is infrequent. During



Hen Warbler approaching Nest.

spring he is even more rarely to be seen; he has then, like all the native species, retired to breed in deeper solitude than a New Zealand homestead can afford, but though gone, he has not gone far, and his faint song is still distinctly audible from the house.

In some dark manuka thicket his pear-shaped nest is built, or deeply set in some dense branched bush. The nest itself is not unlike that of the British Long-tailed Tit, similar in the neat finish and feather lining, but our New Zealander has often a tiny portico above, or little ledge beneath, his entrance hole. The five or six eggs are sometimes almost quite white, sometimes they are freckled like a Wren's, with tiny spots at the thicker end. The Warbler sits close, and often when feeling for eggs or young I have touched the old bird in her nest. The youngsters grow with great rapidity, and for some time after quitting the nest they may be seen all together, haunting the vicinity of their old home. Watching the parents and brood together thus in a family party, the young able to

feed themselves, though still accepting food and all very merry and lively and busy, gives the impression that this last week of companionship must be one of the happiest episodes in the lives of parent birds. The cares and dangers of incubation are past, the labours of feeding and rearing over, whilst there still remains just sufficient responsibility to excite the parental instincts. The young, like children to whom each hour provides new matter of wonder and interest, are content in the exercise of their new developed functions, their facile captures and brief flights.

Then comes a day at last when the Warblers begin to think of their second nest, and again in early summer, as in early spring, couples may be seen *playing* and fluttering in the glades, poised in the warm air, and again may be heard poured forth at every stage of their courting tour that faint, sweet, tremulous trill so unlike the note of any other native bird. It is this second nest that is often patronised by the shining Cuckoo, for the Warbler, though so small a bird—only four inches



Warblers feeding young.



Male and Female Warblers.

long—is that barred migrant's favourite host.

It is the warmth, perhaps, of the domed nest that tempts these tropical sybarites, or may be their knowledge of the unwearied industry of the little Warblers.

The earliest nest I got this year was partly constructed on August 19th, and was but a few days in advance of many others. No doubt, therefore, second nests would be in process of construction, or even finished, by the date of the arrival of the shining Cuckoo.

This Cuckoo arrives at Tutira during the first week of October. This year he was first noticed only on the 8th, and heard at intervals up till the 27th January.

The Fern Bird



THE Fern Bird, like several other species at Tutira, has very much increased in numbers, and has adapted himself to the changed conditions of the run. Years ago I wrote that in the many raupo beds around the lake, the bird might be heard, but that the title "Fern Bird" was a misnomer, for the species at Tutira was never found in the bracken.

The run had been, and was then, still to a great extent covered with deep fern. This growth was swept periodically by immense fires, continuing to burn day and night sometimes for a week at a time. After one of these conflagrations the face of the country was quite black and desolate, and all ground birds and feeble fliers destroyed. After 1895, however, the stocking of the land began to affect the fern, the



Fern-bird's Nest in clump of Cutty-grass.



Fern-birds by nest.

exuberance of its growth began to lessen, and the fern fires became less frequent and less sweeping. Season by season the transformation became more marked, and as the fern became thinner and more dwarfed, so did the Fern Bird increase and multiply and replenish the earth. He has found shelter and safety and food supply over poor lands, and along the edges of hundreds of boggy creeks, spots now comparatively safe, but fire-swept and utterly desolated in the early eighties and nineties. On Tutira he has at last truly earned his name of Fern Bird, and everywhere nowadays through the areas of low fern can be heard his metallic "click," "click," in isolated syllables. His other favourite haunt and breeding ground is amongst the damp flats, where cutty grass grows rank and thick. Four nests were got this season, and all of them were in this growth. Like other species on the run, they wax and wane in numbers, but during the last couple of seasons have become very plentiful.

Before this year I had only obtained a single nest, very neatly built in raupo. This season alone we got four, McLean discovering one in late September (29th), and another in early October (1st). I myself got two nests on the one day in December. McLean's, no doubt, was the early brood, and mine the late.

The nest is planted deep—buried—a foot or fifteen inches in the heart of a bunch of cutty grass, and usually a clump is selected, growing in a soft, wet spot, the Fern Bird, like the Pukeko, relying on these extra safeguards to fend off vermin and trampling stock. Fern Bird's nests can be discovered most easily on horseback, owing to the extra view, and by continuous riding through these half-dry swamps, specimens are sure to be put up. If when a bird is flushed it flies off horizontally, probably it has been merely disturbed at feeding or resting, or gathering nest materials. If, however, the bird pops straight up out of the centre of a clump, the nest, after patient peering, will usually be found deep set among the saw-toothed blades. In form



Male and Female Fern-bird by Nest.



Tern-bird feeding young.



Fern-bird entering nest.

it is a cup-shaped structure, the outer layers composed of cutty grass, the inner of grasses and pliable bents, but it is the finishing touches that peculiarly mark the nest. At the base of its interior, small blue Pukeko feathers are so arranged that their curly tops meet, and to a great extent conceal the eggs.

Ordinarily the species is shy, but in spring the male loses to some extent his timidity. He will then, regardless of the presence of man, mount to the very top of a flax stick, climbing up in little runs, like a mouse or a house fly. His tail is all the time bent in towards the stem; indeed, like a young bird swung in the air, the Utick seems to use his tail for balancing.*

He soon becomes accustomed to the camera, and many of our photos this year were taken at the distance only of a few feet. The nestlings were chiefly fed on daddy long-legs, though occasionally moths, grubs and caterpillars were also brought in.

NOTE.—See Paper by H. G-S. in Transactions of the N.Z. Institute.

We noticed that the sacs of excrement, when borne off, were mostly taken to one particular spot, probably not designedly, but from force of habit, the particular blade of flax where they were usually dropped being presumably on the line of the richest food collecting area.

Sometimes the Fern Bird will fly forty or fifty yards, his long abraded tail hanging down all the time, and giving his flight a ridiculously feeble air. Usually these efforts are much shorter, and when constantly visiting the nest, much of the distance is covered on the ground, the bird running like a mouse beneath the overarching leaves and threading its way with the utmost ease through the thickest obstructions.

Often, for reasons connected with light and shade and proper background, a bird has to be diverted from its accustomed track. With some species this is easily done, but it was in vain we tried, with heads of cutty grass, to deflect the Fern Bird from his chosen routes. He was always able to push through our barrier, rustling through the sere, brown growth



Fern-bird about to settle on nest.



Fern-bird and young.



Fern-bird.



Inspecting nest for sanitation.

and appearing unconcernedly on the nest's edge with moth or daddy-long-legs.

Unlike the Warbler, Waxeye, and Fantail, where the percentage of destruction, both of eggs and young, is very great, perhaps, indeed, one-third, the Fern Bird seems to suffer no great loss. The nest is excellently concealed, and its site very unattractive to vermin, both on account of the saw-toothed sedge and the wet surroundings. The bird itself is too small to be worth the pursuit of Harriers; and Wekas, without great difficulty, could not obtain footing on the stiff, bristling clumps wherein the nest is hid. The Morepork at night, even should he discover the nest, would be kept off, too, by the same harsh growth. In fact, the Fern Bird is likely to survive, for he can obtain sustenance even in the most arid and barren lands, neither does a low temperature affect him unfavourably, for I have noticed the bird fully two thousand feet above sea level. His metallic "click," "click," is likely, therefore, long to be heard in the land.

The Tui



CONSIDERING our opportunities the Tui has baffled us more than any other species attempted during the past season. Not that he is very shy or very timid; far less so, indeed, than we had anticipated. It is the extreme rapidity of his every movement, the gloss and sheen of his plumage, and to a lesser degree the brief period between laying of the eggs and development of the nestlings. The young, furthermore, are very restless and wild, and, when jarred and disturbed, and both are unavoidable, readily quit the nest, a proceeding in every way abetted and encouraged by the parents.

In spite, therefore, of the many nests found and the trouble taken in building Swiss Family Robinson platforms high



Tui feeding young with fuschia berry.

among the trees, the photographic results have been poor. By ill luck, the only fairly good negative gave us the bird without his tail. He had during the infinitesimal fraction of time necessary for exposure, turned from broadside to full face. Nor has such a case been exceptional; again and again has the image on the plate turned out utterly different from our anticipation, the bird, for instance, pointing north and south when we had expected it east and west.

In this alone, of course, there is nothing surprising, but it seems curious that several of these plates have come out sharp and clear and show no trace of motion.

The movements of some breeds in particular are enormously rapid, and there seems to be a great lot of luck in very fast photographic work, and even with the most rapid lens; the most restless species may be secured in a quiet fiftieth part of a second, and the most phlegmatic and slow spoiled in a restless hundredth.

Then, again, when the parent birds of any breed have become suspicious, even

though to the human eye, the rapidity of their movements has not been perceptibly accelerated, the dark room will tell a different tale. Contrariwise, that is why so often photographs will come out satisfactorily when the two parents appear together. Each has given the other confidence, with the result that their motions are more slow and leisurely. This in part also accounts for the superiority of a second over a first day's work.

The sunlessness of this last season, too, and its constant summer rainfall, also militated against us, the Jordan sunshine recorder showing eight perfectly sunless days during November, and nine during December. Then, also—and this is the best reason of all to account for my failure with the Tui—I had no intimate knowledge of its habits; I mean that real intimacy begot of watching unseen a bird, hour after hour, and day after day.

At the beginning of the season we did not dare to take liberties, which too late we found might have been successfully attempted. In our siege work we erred on

the side of over-caution. Still, as a rule, the processes of sapping and mining can hardly be too gradual, and in our operations against the Tui it was, after all, rather the weather and the very rapid development of the young that beat us.

Among all species throughout the rearing of every brood there is a gradual increase of devotion to the nest and offspring, this devotion culminating a few days before the birds are fit to fly. A nest in building will often be deserted if looked at, neither when complete is it of much account in the eyes of the little builders; even eggs, when perfectly fresh, inspire no great ardour. As, however, they approach complete incubation, so in exact correspondence do the parental instincts of care and tenderness increase. Then, again, there is a great leap in parent love from the moveless, quiet shells to the pathetic little creatures that move and wriggle in the nest.

They become daily more and more precious, until the feathers are almost complete, when the old birds' affection begins slightly to cool, or perhaps, rather, they

know that their offspring can do without them for longer periods, and that closer attendance and constant feeding are no longer necessary. With species such as the Warbler, the Waxeye, and the Fantail, the camera will be least regarded between the third and tenth days. No generalisation is possible, of course, but after the young are a few days' old, no parent birds, save indeed Harriers, will leave their brood unless driven off by very gross blundering and mismanagement.

The earliest Tui's nest got this year was on November 12th. I believe it was not finished, but did not care to climb up for fear of doing harm. On the 23rd the Tui was on the nest. She was sitting hard, and probably the eggs were just hatching. At any rate, I boiled my billy and lunched not far from the tree, and satisfied myself that neither of the parents was bringing in supplies.

On the 11th December the nestlings were gone, and inspection of the broken shell chips, fragments without doubt from incubated eggs, the soiled condition of the nest



Tui's Nest in Tarata.

and its tilt all told of a brood safely reared.

There were, therefore, in all probability eggs in this nest on the 23rd, and they had hatched out and gone by the 11th, and, of course, possibly even earlier.

I got another nest on the 26th November containing a single egg, and on the 11th of December there were young in the nest. How many of the young were at that time hatched, and what their age might then have been I cannot tell, as again I was satisfied with the knowledge that they were out of the shell and feared to disturb the parent birds.

Late in November and early in December is the height of the Tui's breeding season. About that date we knew of five or six nests, and four of them were in one patch of bush about a couple of acres in extent. I got a nest on January 1st, with a fresh egg just broken, and McLean got the last nest of the season, with four eggs, on the 7th.

The Tui sometimes builds in a "cup" of small branches, often selecting a thick clump of side shoots for a site. Oftener

the nest is placed among trails of supple-jacks and bush vine or lawyers, never in too thick a clump, however, and always at twenty or thirty feet from the ground.

The nest is about the size of a Black-bird's, or Thrush's, but not so deep or compact, and is always finished with an edge of manuka twigs. It is only loosely secured on its site and many Tuis' nests are blown from their moorings during summer gales. The graceful eggs are much pointed and white, or white shot with a very pale rose or pink.

Both nests under the camera this year were built on matapos. The Tui feeds her nestlings on fuchsia and probably other berries, and supplies of some sort were also gathered from the matapos in the vicinity.

The Tui very strongly resents the presence of other birds in the vicinity of his nest. In the Kaihekatearoa bush, where their nests were so numerous this season, McLean saw one pursuing a pigeon, nor did the persecution cease, even when it settled, the unappeased Tui sidling up the branch and

digging his enemy in the ribs. During December we got a Tui's nest in a small spinney near the Waikahau river, and from above, off the hill's steep slopes, we could both see and hear the bird singing on her eggs.

Never before had I known any species sing on the nest, and this Tui's "O-coc-coc-coc-coc-coc," each syllable rapidly enunciated, produced a distant and peculiar note, impossible to forget or confuse with any other. When her mate was expected—presumably she was the hen—the bird seemed to raise herself on the nest and stretch forth her neck as if in expectation of food. We were close to her, yet she sang as if her song could have no ending, as if the world was too full of the ecstasy of life for wrong and rapine to exist. The sun was shining above the flowing river, the leaves green, of every shape and shade, her great love had cast out fear. Much of the Tui's singing we cannot hear, the notes too high, I suppose, for our human ears, for I have often watched the bird's

throat from but a few yards' distance swelling with song entirely inaudible.

Excuses have been given for our failures with the Tui, both in wretched negatives and scanty notes. The honest truth has been kept to the end. It was shearing time, and an extraordinary instance it is of the inherent perversity of human affairs that shearing should occur just at the busy period of the year, when all the birds are nesting, and during the very height of the breeding season. To it the Tui has been sacrificed; the fact is I had to be about the shed and sheep yards when really I should have been working.



Nest as first seen with no branches cut away.



New pigeon sitting.

The Pigeon



THE geology of the run is too fascinating a subject upon which to embark in detail. Suffice it to repeat what has been said before, that there are several hundred miles of precipice and crag on Tutira. The western boundary running north and south is for miles a rampart of sandstone capped with limestone. The native name of the block, Heru-o-Turea, the comb of Turea, most aptly describes the look of the country side, sliced as it is into sections by immense sandstone ravines, each forming a separate "tooth" of this titanic comb.

The boundary rivers of the run are gorges from watershed to within two or three hundred feet of sea level, and many of the paddocks are almost completely bounded by cliffs and gorges. In the

crannies of their sheer sides all sorts of interesting plants find foothold, and where one stratum overlaps another, limestone over papa for instance, the superposition is marked by a long line of greenery, sometimes flax and toi, but often rangiora, fuchsia, mahoe, etc., and it is on their lateral branches, jutting out into the air, that pigeons love to nest.

For pigeons, therefore, Tutira is an ideal breeding place, and many nestlings must be reared on the run each year.

This season we got four nests, three of them built in lateral forked branches jutting out from cliffs; the fourth, built in low bush, was spread over the intercrossing growths of three species of tree and an immense lawyer vine. The pigeons' nest is not unlike a heap of magnified spillikins well spread out and flattened. Only sticks are used, and through them from beneath can be seen distinctly the peculiarly long narrow white egg.

The earliest of these nests came to grief a day or two before the 3rd of November,



"Pidgie," and his mother.

for upon that date I found the perfectly fresh egg lying broken beneath the spillikin platform. It had been probably blown out during windy weather. The next nest was found on November 11th, and one of the parents was sitting on the egg "Pidgy."*

On the 5th of January I took him from the nest, and he was capable of flying a yard or two on January 12th.

Another nest was got on December 23rd, containing a young bird, "Kuku," of about the same age as "Pidgy," and he also was taken home. On the 18th December I got another nest, the parent sitting hard on the egg "Uncle Harry." By the 5th of January "Uncle Harry" had hatched. Later on he, too, was taken home to be hand reared, and on January 15th was able to fly a yard or two. From the start all these hand-fed birds thrived admirably, and I believe the first attempts at flight were in no degree delayed by their short spell of artificial life.

NOTE.—The three pigeons brought in for pets were christened by my little daughter "Pidgy," "Kuku," and "Uncle Harry."

Of the two nests got with eggs, the first was found on November 11th, and the young bird was able on January 12th to fly a yard or two, and would no doubt then have left the nest. Sixty-one days, therefore, elapsed between my discovery of the egg and the evacuation of the nest by the young bird.

The second nest contained an egg on December 23rd, and the nestling hatched from it was fit to fly a yard or two on February 15th, or fifty-four days later.

The egg, moreover, in the first nest was certainly not fresh when discovered, and in the second nest was very much incubated, the darkness of the young bird's body showing very markedly through the shell.

Some seventy days, therefore, must elapse from the laying of the egg to the abandonment of the nest by the young bird.

Such a long period of defencelessness must be compensated for by long life and a very small percentage of loss to nest and nestlings, the more so as it is possible that with breeding operations so unusually protracted, the pigeon may lay but a single

egg in the season. On the other hand, I have got pigeons still in the nest at a very late date, and, taking the first weeks in November as the commencement of laying, and supposing that the young are gone by the second week of January, and further supposing that the old birds build again at once, there would still be time for a second nest, the second youngster leaving it by somewhere about the third week of March.

Each of the nests containing egg or young has been under the camera, and from them much insight has been gained into the pigeon's domestic arrangements and way of life generally. We have found out what excellent mothers the hens are, how seldom the young require nourishment, the curious method by which their wants are supplied in the nest, the different notes of young and old, and their extreme hardihood both in the shell and after hatching.

The female pigeon when sitting is rather more steadfast in her objections to leaving her egg than the most broody old hen of a fowl yard. Pecking the intruder's hand, striking at him with her wings, and "growl-

ing" with anger, she will withdraw to the very edge of the flimsy platform, nor during this retreat is the egg, which, I believe, is somehow carried between her thighs, ever exposed to view.

When desirous of securing a picture of the egg alone I have tried again and again to gently shove her off, but in the end have failed and had to leave her, exceedingly angry and broody, her feathers fluffed out, her tail spread to the very fullest extent, but victorious, and still in possession of her treasure.

The egg, nevertheless, need not be so carefully cherished, at all events as far as warmth is concerned, for on the 5th of December I know that "Pidgy"—to my great concern—was uncovered for over four hours, yet on the 6th he was hatched a fine strong chick.

The hen pigeon, when not disturbed, is an extraordinarily quiet and serene sitter, apparently for half an hour at a time not altering her position in the slightest degree.

One of my particular ambitions of the past season was to see this species feed its



Young Pigeon expecting food.

young, and to secure a picture of the act in progress. The nest where "Kuku" sat was selected for the preliminary effort. He had been first discovered when a well-grown bird of three weeks, and opposite his platform a screen and sham camera had been fixed.

This first attempt was a failure, for although I waited for over twelve hours, the old birds never visited the nest.

I was there by 6.30, and a few minutes later had finished unwrapping the real camera—placed there overnight—and was ready. During these operations the nestling never moved, but for a couple of hours lay quite still with his back to me. Later on he changed his position from time to time, once or twice during my vigil stood up in his nest for exercise, and at intervals during the long day, did a good deal of yawning, preened his feathers, nibbled the leaves and sticks within reach, relieved himself over the edge of the nest, rolled his crop round and round as pigeons do, and also went through series of throat and neck exercises, retching as if he was preparing to be sick.

At eleven he began to feel the heat very much, and moved about the nest, seeking for the least particle of shade. About noon I saw the parent birds in the distance, and heard them alight on a tall dead tree some sixty or eighty yards away.

It was not, however, until long past six in the evening that either of the old pigeons began to approach the nest.

It was then too late for photography, and partly because I wanted the young bird and partly because I thought it just possible it had been deserted, I decided to carry "Kuku" home.

I had, moreover, the less hesitation in taking him, as there was a second string to my bow in the nestling on the Racecourse cliffs. In regard to desertion, later in the year, and with a larger knowledge of pigeon nature, I found that I had certainly been quite mistaken, and that the old birds were merely keeping away because slightly suspicious, and well aware that their nestling would be none the worse for a twelve hours' fast. Through that long day indeed the nestling never seemed to me to



Pigeon very angry and retreating to edge of nest.

evinced any signs of hunger. He never whined or piped or looked about him with any particular interest. On the contrary, "the dog it was that died"; it was I who was starving, for my lunch was in my saddle bag, and I could never, of course, venture out for it. As, however, hour after hour passed with my thoughts fixed on the joys of witnessing the pigeon feeding its young, I began to think about feeding myself, and the poor innocent bird on its nest began to have a ludicrous resemblance to quail on toast. By 6.30, when I left the cliff, ample as were the proportions of the quail, and huge as was the piece of toast, I could have easily disposed of both. I rode home that night wondering if it was suspicion of the shining lens—the screen had been up three days—that had kept the old birds off, whether they fed the nestling only at dawn and very late, or whether in truth the nest had been deserted.

Allusion has been made to the discomfort suffered by the young pigeon from the sun's heat. That its rays should have ever reached the nest at all was of course owing

to the necessary tying back of some branches and the excision of others. The pigeon is most particular to guard against any risk of this sort, and always selects a site in open shade and where the sunlight is filtered through many layers of leaf.

The bird incubates indeed in almost complete shade, for even at noon hardly a chink of direct light falls on her.

During August, when the mated birds, clad in kings' raiment of purple and gold and green, seem on their lichened kowhais conscious only of the joy of spring returned, perhaps really they are planning their future nests. There can be no greater error than to believe that any spot is good enough for a bird to build, and I believe myself that the nestling site is only chosen after long deliberation.

This year three times I chanced upon a pair thus deep in thought, each time upon the same branch, and within a yard of the spot finally chosen for the nest—a nest from which, unluckily, the egg was blown or tumbled out. I have often admired the care with which the details have been



Hen Pigeon and young.

studied out, the shadow of each leaf and growing leaf, the sway of branches dancing in the breeze or lashed and swaying in the gale, the course of the water runnels that cling and linger on the wet bough's base, the ceiling of leaves that overlap like scales, and are fit to deflect even the huge drops of thunder rain.

The Pigeon, nevertheless, in his choice of a site, does not seem always to quite allow for the force of gales in spring, and possibly a few nestlings and eggs are blown from their spillikin platforms. I have mentioned the egg found broken beneath the nest, and "Pidgy," after a violent storm, was found beneath his nest, unhurt, however, and serene on a bed of swamp fern. Evidently he had been fed and tended there by the old birds. In his case, however, alterations had been made in the surrounding branches: several saplings had been cut and other boughs fastened back.

My second attempt was on the Racecourse nest, which was reached at 3.20, for on this occasion I was determined to discover if really the nestling was fed at dawn. A

few minutes later the silence of the bush was broken by a single sharp, clear note from a Tui, and shortly afterwards a Warbler began to trill. The young Pigeon lay with his head sunk between his shoulders, and remained in that posture till after eight o'clock. About then I heard the parent birds settle in the immediate vicinity of the nest, and presently I became sure that the youngster was about to be fed. He also knew it, becoming watchful and attentive to every sound, and beginning also to pipe faintly and agitate his wings, shaking them out from his sides with a curious shivering motion. These expressions of his feelings became more and more marked as the hen bird approached, and when at length she perched only a few yards distant from the nest, the youngster's eyes were rivetted to her with an intensity of gaze almost solemm in its earnestness.

I noticed, too, that though he thus followed with his head her every motion, he had shuffled his body round so that it pointed directly towards a certain claw marked bough that led on to the nest plat-



Young Pigeon being led.



Preparing to resist.

form. He thus sat looking across his shoulder, his head following her body slowly and steadily, as iron does a magnet. All the motions of the parent bird were most deliberate, although by this time her offspring was piping with impatience and continuously shivering out both wings, but especially the one nearest her.

Still acting with tantalising slowness, she finally reached the branch leading into the nest and towards which his head now as well as his body pointed, and down this bough she sidled till close to her eager nestling.

Then, again, she paused as if to calculate the exact distance, bending her neck down towards the young one, who simultaneously raised his head. Their beaks then met, the old bird's overlapping that of the nestling, and the contents of her crop were transferred to his with curious swaying, undulatory motions. This remarkable operation took about three seconds, and I judged that the food given was at least partially digested from the absence of dilatation in the nestling's outstretched neck. After staying for a few

minutes about the nest, she flew off and the young bird again settled down comfortably on his platform.

I had at last witnessed the actual process but still wanted to find out how often it was repeated, for as yet one of the puzzles of the bird had been that no attempt at feeding had ever been witnessed, and although McLean was away for some weeks at this date, I had been time after time for hours about the nest, and the Pigeons were perfectly accustomed to the screen which had been then up for weeks, and was, indeed, hardly necessary, so friendly had the birds become. Until that afternoon no further feeding took place, and no bird was even in the vicinity except the male, who kept watch and ward from his perch on the dead kowhai tree. He never moved from there, and only at long intervals exchanged a "ku" with me. At about four I heard the hen settle a few yards off, and at the sound the nestling began as before to prepare for his dinner, shaking out his wings and piping.



Young Pigeon being fed.

As before, too, though his eyes were rivetted to his parent, yet his body pointed to the claw scratched bough leading to the nest. Again he sat with his head pointing across his shoulder, as step by step the old bird sidled down the bough.

Once more, after due pause for exact measurement of distance, were the beaks of parent and child locked together, and as before the contents of her crop transferred to him. Both parents, I believe, fed the nestling, but the female was the more bold and more frequent visitor.

How often young Pigeons may be fed in very early life or immediately before leaving the nest I have no means of knowing, but about nine o'clock and about four o'clock were "Pidgy's" meal hours during a considerable portion of his nest life, and experience gained by the artificially reared birds bears out the belief that Pigeons only feed twice a day. My trio, while on their made-up nests, were never ready for food oftener, and to this day in full liberty come down to be fed but twice in the twenty-four hours.

No doubt at first the baby Pigeon is fed from the proliferation of the cells of the parent's crop, and gradually the food given in a form less and less digested. During his last week in the nest "Pidgy" was being fed on almost or quite raw kaiwhiria berries, for the ejected kernels lay thick beneath the nest. The transference of the contents of the crop then takes longer, and is repeated twice or thrice in a couple of minutes.

"Uncle Harry" also, like "Pidgy," was an egg when I first discovered him, and as I had failed before to get a photo of a Pigeon's nest and egg, and as this nest was in an impossible position, we decided to lower the sapling on which it was built, photograph the nest, and afterwards replace the whole. Much had to be done, for the nest rested on intercrossing branches of three trees—tawa, whau, and matipo—as well as on a lawyer vine, and all sorts of sawing and snipping and cutting was required.

First of all, however, and in case of a sudden jar, and as an act of extra precaution, we took out "Uncle Harry,"



"Ku-Ku."

raking him out very gently from beneath his mother. I then wrapped him in my cap in case he should be broken, and left him on a limestone ledge while we continued our work.

After a time it was curious to notice how the mother Pigeon gradually began to miss him and became uneasy, yet even then we succeeded in lowering her down, still sitting, to the required level.

It was only when we had all but secured the lashings of the lowered sapling, that she flew off, shamming lameness and a broken wing, and fluttering off through the open underwood—the only time, by the bye, I have noticed a pigeon exercising this useful ruse. Had she had her egg beneath her I believe she would have continued to sit through the whole operation.

“Uncle Harry” was then put back in his nest and photographed, the sapling was replaced and securely fastened, and when an hour later I returned, hardly daring to hope all would be well, I found the courageous hen again sitting on him. In due course he hatched out, and eventually was

taken to join "Kuku" and "Pidgy" at the house.

The Pigeon has several notes, one a single low "ku," which may be taken to express watchfulness and caution, perhaps recognition too; then there is a louder, more interrogative single "ku," by which alarm is indicated. The "growl" of extreme anger in the hen bird, and the eager piping of the nestling in expectation of food, have been mentioned. There is also the almost inaudible sharp, slightly sibilant whistle of welcome, hardly perhaps a whistle, or if to be so designated, then a whistle ethereal, spiritual and sublimated to attenuity. I often hear "Uncle Harry," perched in the pear tree, shaking his wings and whistling thus when he spies me on the lawn and welcomes my approach. Then there is the curious double sound of grunt and whistle, noticeable when food is not at once forthcoming, and which may perhaps express impatience. Lastly there is the moan* coming sometimes, though very

NOTE.—"The moan of doves in immemorial elms, and murmuring of innumerable bees."



"Uncle Harry."

rarely indeed, from the parent bird—usually the male—who watches and guards the nest. What is its signification I have no idea whatsoever. There seemed no reason for it, and I could associate the sound with neither comradeship nor danger.

The youngsters thus ravished from their nests and named by my little daughter “Kuku,” and “Pidgy,” and “Uncle Harry,” were each, upon arrival at the house, presented with an artificial nest, and though I say it who shouldn’t, quite a superior article to the original. A large bowl was filled up with broken flax stems, over them were placed sticks, and on top of all the slender droopers of weeping willows cut into short lengths. “Kuku” and “Pidgy” were companions at first, and afterwards, owing to an accident to the latter, “Pidgy” and “Uncle Harry.” They were fed on oatmeal porridge, and on that and bread they thrived from the very start of their new life. During the first few meals the feeding was rather a messy business, but we soon learnt that by gentle manipulation of the throat, the birds

could be made to voluntarily gape. The porridge should be fairly thick, and if it is then fed with a teaspoon and the little sections moistened with milk, they slither
• down the Pigeons' throats most artistically, and no porridge sticks either to the neck of the bird or the fingers of the feeder. The birds held their beds of state at eight in the morning, when the nest had been changed, and then, before the throng of courtiers, each eager to do the feeding, and each firmly impressed with the belief in his or her superior method, the Pigeons received their first meal. The second was about 2 or 3 in the afternoon. After feeding was over there was the further interest of watching the process of "churning," as we used to call it—the stirring of the crop round and round, first one way, then the other. After feeding too, often the tail feathers would be agitated for very long with a rapid shivering tremor. As early as their third meal piping and quivering of wings assured us of an eager appetite. Later, bread was added to their simple menu, and sometimes cake, which their

souls adore, and which was always welcomed with extra piping and wing fluttering. The wing is held out laterally, and we were thus able in a manner to shake hands with our little charges. The birds during this period of detention, were very careful never to foul their nests, always retreating to the edge of the platform when about to relieve the necessities of nature. When they began to want to fly, our friends were removed to an aviary, where they could practice short flights. In it they stopped for a week or ten days, learning always to hop down from perch to perch when meal times came round. Except this, they moved but little, and I should imagine that under perfectly natural conditions, when the young first quit the nest, they do little more for many days than perch quietly and feed. Maybe during that period they are still nourished by the parents, or perhaps the old birds lead them to a berry-loaded tree and there leave them. There was never any question of confining or cageing the birds, and the little aviary was only used during these few days because the young-

sters were beginning in their peregrinations to upset the ink and generally disarrange my working room, where they had been brought up. At last came the day of liberation, with its anxieties lest the birds should lose themselves during the first flight, and its satisfaction when we beheld them established and at home in the big willow on the lawn. One side of the aviary, I may say, was taken down so that they could emerge from it without any handling, for however tame birds may be they cannot bear to be held—their liberty is too precious to be entrusted even for a moment to the very dearest of human friends. Should grasping, however, be unavoidable, the bird should be held gently, though very firmly. The struggling, which terrifies more than the capture, can thus be almost entirely avoided, and the bird liberated tenderly and quietly. Ever since then, with the exception of another brief period of detention to “Pidgy,” through an accident, and to both during the worst period of their moult, “Kuku” and “Pidgy” have come and gone in perfect freedom. “Uncle Harry,”



"Uncle Harry" three weeks old.

taken from the bush at a later date, was still in his artificial nest in my working room, and was not then fit to fly. Their first meal is usually made a little after our seven o'clock breakfast, and the second after lunch, or should the household be away, about afternoon tea time. In the event of prolonged absence, we would find the birds waiting for us in the drawing-room or one of the bedrooms off the verandah, and would get a friendly whistle and a shake of the wings as welcome. But although perfectly clean in their habits, we had to discourage this custom, as "Pidgy" one day in an attempted exit hurt himself against a closed window.* By the last week in January "Kuku" and "Pidgy" were in magnificent colouring, their plumage perfect, and themselves very fit and strong. After that moulting began and the feathers gradually

NOTE.—While perched on trees, pigeons during showery weather wash themselves by turning their wings, one at a time, upside down, and thus enabling the rain drops to fall into an almost flat inner surface of feather. To assist this operation, the bird leans very much over to the side, and the extended wing held over his head appears as if dislocated or broken, so completely is it reversed and supplé.

lost their lustre and gloss. The whole plumage, too, seemed to be thinner and not to fit and overlap with the former exact nicety. The birds, in fact, looked comparatively shabby and dingy. We noticed, too, that their appetites fell off, and by the first of March they were in poor plight. "Uncle Harry's" moult, perhaps because he was later hatched, seemed to come on faster, and a noticeable crop of quite new quills appeared about the base of his beak. There is no native bush close to the house at Tutira, and the only shelter for Pigeons smallish clumps of *pinus insignis*, through which heavy wind and rain can easily penetrate. As about then the Pigeons were evidently feeling the bad, wet weather—"Uncle Harry," indeed, was found on the ground one day in a very wretched condition—the three were again put back into the aviary, where there was good shelter, and where the birds could feed out of the rain.*

*NOTE.—This housing of the Pigeons was done just in time, as on the 30th March 480 points were registered, 836 on the 31st, and, on April 1st, 341.



"Uncle Harry" in his artificial nest.

As before, the whole side of the aviary was opened, and the birds were marched in seated on our heads and shoulders—their usual habit when flying down to be fed. All handling was thus avoided. The birds were in no way fluttered or terrified, but hopped quietly from our heads on to their perches. After one or two attempts at the wire on the part of “Kuku,” the trio settled down happily, and were fed and watered in their enclosure for two or three weeks. Moulting is with the Pigeon seemingly a lengthy process, for even by mid-winter our trio were in far from perfect plumage. Probably under natural conditions the young birds retire during the worst period of the moult to the very depths of the bush, and there, in shelter and comfort, build up their strength. About mid-April, when they began to seem more robust, the aviary was opened and the birds allowed to quit at their own convenience. Since then they have enjoyed full freedom, coming to their meals every day, once in the morning and once or twice in the afternoon. Whilst eating, the pigeons are most par-

ticular as to the condition of the feeder's hands. On one occasion I had been gardening in muddy weather, and the birds, though hungry, evinced every sign of disgust and nervousness at the soiled appearance of my hands, and, indeed, I had to wash to appease their susceptibilities. Gloves, too, cause them uneasiness, and on another occasion, when a Maori woman, one of my innumerable "landlords," wished herself to feed the birds, her brown skin was so evidently an offence that we feared the stout old lady would notice it, and had to invent many excuses for the birds' unusual conduct! They are now beginning undoubtedly to feed themselves on poplar buds, the undeveloped male seeds of the insignis, and probably other dainties of that kind.

Often I hear the Pigeon termed a stupid bird, and just as an honest man among rogues is called a fool, so perhaps the Pigeon's trust and guilelessness does deserve that name amongst those who shoot him sitting at close quarters. Otherwise he is by no means a fool. Far from being stupid, the



"Uncle Harry" and his mother.

Pigeon, on intimate acquaintance, seems truly a very sensible bird. Thus, when put back into the aviary after some weeks of entire freedom, many birds would have spent hours battling against the wire. Not so the Pigeons. They at once settled down. Then, when poor "Pidgy" was hurt by an angry hen, and carried back wounded to my working room he was welcomed by "Uncle Harry"—still on his artificial nest and then for long separated from his parents—with effusive wing shakings, and it is a curious fact that on at least two occasions "Pidgy" attempted to feed the younger bird pigeonwise from the crop. Then, again, "Pidgy," when brought back hurt, settled at once on his bowl and resumed again his old cleanly habit in regard to sanitation of nest. Other instances of a high degree of intelligence on the part of the two perfectly wild bush birds that have domesticated themselves will be mentioned later. Of the trio it is "Uncle Harry" whom we love best. I confess we spoil him, though, mind you, his is not a nature easily hurt. He is too gentle and

good, and if he does get more jam roll and cake and sponge cake and the buttery inside bits of scones, who can resist a creature so sure of his welcome? We can tell him before he alights, merely by his straight, resolute flight to shoulder or head. He has never heard a harsh word or known a moment of fear, and comes up like a happy child not knowing yet that elders can be churls and chide, or that there is aught in life but loving welcomes and loving words. He was taken from the nest as a younger bird than the others, and we rather flatter ourselves that his superior manners are the result of a longer acquaintance with the Guthrie-Smith family and their guests. While still on his artificial nest, I was always, when passing between my workroom and the darkroom, sure of a friendly wing shake, and this often when the bird was full fed, and when there could be no suspicion of cupboard love in the action. Afterwards, as a grown bird and free, for long we continued to exchange greetings, I on the lawn giving him a word or two, he on the tree top softly fluttering

his wings in reply. I notice, however, that as the birds grow older, this pretty infantile custom becomes more and more rare, and has now indeed practically ceased. Each of our three birds has his own well-marked individuality and special habits, "Uncle Harry," for instance, always preferring to fly direct to the head or shoulder. There his first act is to nibble along the edge of the nearest ear, ending up with a real good hard tweek, just for all the world as if he was wrenching a morsel from a slice of bread. He likes also to be fed on the shoulder, peering eagerly over for the morsels handed back to him. "Uncle Harry's" speciality is the human ear; but each of the three will, when hungry, attempt to swallow the little finger or the finger tips. Perhaps by some blind, confused mental process they may believe us to be some new species of berry bearing tree, the fruit borne always at the extreme tips of the branchlets. "Pidgy," always rather more touchy than his mates, has of late begun to suffer from what in a human subject we should call nerves, and unless

every motion of his feeder is extraordinarily gentle and deliberate, will on his worst days open his wings as if to strike, and even use his beak to peck. This, we know, of course is only his way, and not bad temper or malevolence, and doubly excusable after his two small accidents in early life. "Kuku" is the strongest and handsomest of the original trio. He is the first usually to alight on the ground for fallen scraps, a position disliked by the Pigeon tribe, and where they show to little advantage, with their awkward hops and waddling gait. He is a famous trencherman, too, and even when moulting, his appetite hardly fell off. Of the three he is the wildest bird, perhaps from natural disposition, perhaps because he was a more mature nestling when first transferred to my work room.

Some time about the beginning of April, these three, "Kuku," "Pidgy," and "Uncle Harry," began to attract other wild bush pigeons to the homestead, and somewhere about that date my little girl was de-



"No. 4."

lighted to notice a fourth bird on the pear tree top, "because, you see, Daddy, it might be 'Uncle Harry's' munnie coming to see if we are good to him." On one or two occasions there was also a fifth bird about the place. But it was not until the beginning of May that either of the two wild birds showed any signs of wishing to make our more intimate acquaintance. About then one of them, whom we christened "No. 4," began more and more frequently, sometimes two days running and again sometimes not for five or six days, to come down with the others. At first he was content to watch them from his pear tree perch, but at last approached still nearer to the scene of their feasts, and settled on the verandah roof. Still later he took the great step of joining the tame birds on the lawn, where on that particular day they were being fed. At first he would not attempt the bread thrown near him. On the other hand, he appeared to think that not to eat when the others were feeding, might, in the strange company in which he found himself, perhaps be considered a

breach of good manners. He fed, therefore, at first out of courtesy and complacence, on the only vegetation visible. This was grass, and it was comical to watch him plucking rather distastefully small mouthfuls of this uninviting "tack," whilst the other three were gobbling at their little squares and cubes of bread. Several times he thus fed with the others, hopping about and apparently searching for something better than the grass and daisy heads, of which he partook sparingly and in a very half-hearted fashion. At last one day he was seen to pick up and swallow one or two tiny crumbs, and this we considered another great step in his education. After this my dates are exact, for our hopes were growing that we should be able to hand-feed and tame a fully matured wild born bird, and we were all very much interested. On June 2nd he was again on the ground, and this time attempted to secure a bit of bread out of "Uncle Harry's" beak. A day or two after, and when once more on the ground with the others, "Uncle Harry" was observed to feed him twice, turning



"No. 4" at breakfast.

round to do so, and moreover taking care to shove the bits of bread well down his throat. On June 5th, sitting on a low branch, he took bread readily, but though eating a hearty meal, could not be quite coaxed to leave his branch and accept the proffered wrist. On the 6th he took from me a big feed of the suety crust of an apple dumpling. Though, however, he would not venture on to my wrist, he was otherwise perfectly serene, and apparently regarded apple dumpling crust as not at all an extraordinary diet for a sensible bird. Between the 5th and the 13th, whilst being fed, he was repeatedly within an ace of trusting himself on wrist or arm, and several times, too, when about to alight, hovered as if intending to perch on the head of the bread carrier. Until the 13th his heart failed him, but upon that date he flew without hesitation or vacillation straight to the head of one of our guests, and allowed himself to be quietly manipulated on to her wrist and in triumph lowered down and fed. We now consider him completely domesticated, and as a

regular member of our little flock. "Kuku," "Pidgy," and "Uncle Harry" are tame, and will allow their friends to caress them. But this newcomer is still more confident and trustful. The young birds, especially "Pidgy," are liable to sudden panics, on which occasions they seem to be listening intently, and then dash off in all directions. "No. 4" is the last to join in these stampedes, and sometimes does not budge at all. Nor does he seem to have any objection to numbers, for during his first few meals, we were all eager to view him closely and admire his magnificent attire. He is a heavier bird than any of the others, and his matured plumage quite outshines that of the younger Pigeons.

On June 26th another bird, "No. 5" as he is called, flew down on to the lawn, and as "No. 4" had at first behaved, began to pluck and eat mouthfuls of grass. That day he was in company with the other pigeons, and with them came up close to us and appeared perfectly tame. Four days later he arrived by himself, settling on the verandah roof, and his mates ap-

pearing shortly afterwards, the lot finally perched on the railings. There for some little time "No. 5" watched the others feeding, and at last quietly flew on to my daughter's head, hopping after a while on to my wife's arm, and then on to her shoulder, but still refusing the bread offered, and always attempting to pluck the finger tips. So trustful, however, was the bird that even on this, his first close connection with us, when his mates scattered in one of their sudden panics, he quietly remained.

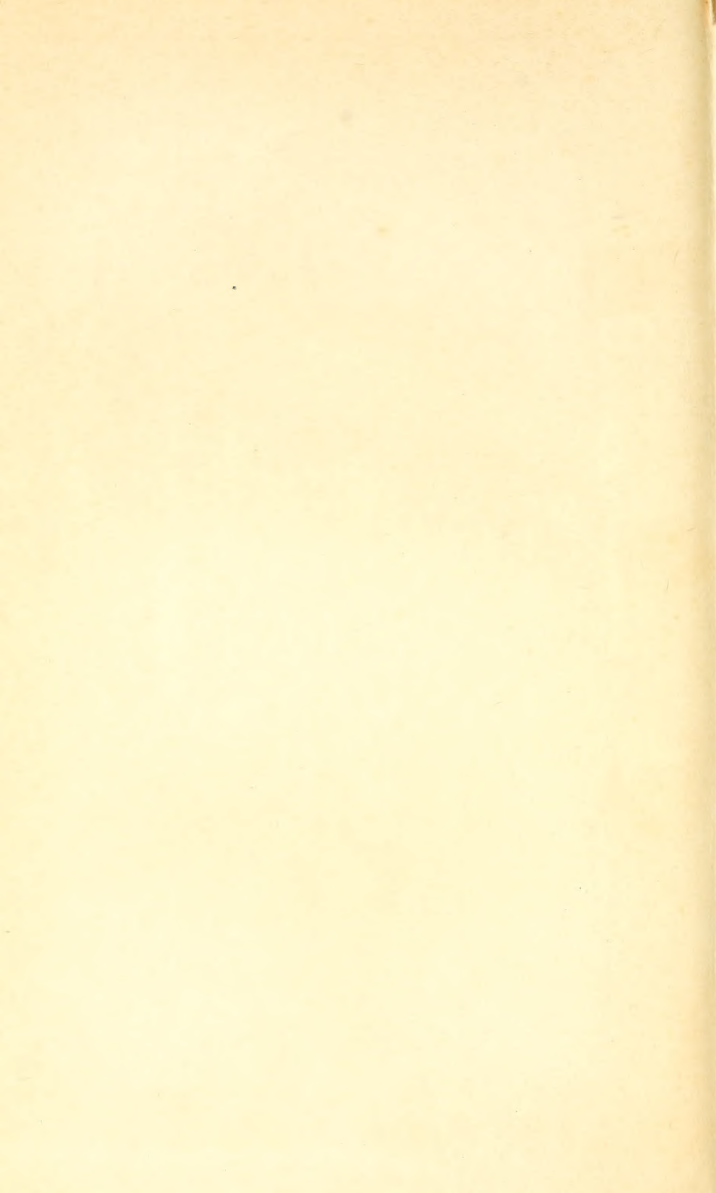
For long this bird had been about the place, and had evidently noted that we were entirely to be confided in, and that his friends were obtaining food. These facts he must have pondered over for months, while "Pidgy," "Kuku," "Uncle Harry," and, later, "No. 4" were filling their crops and making themselves very much at home with us. It was not, however, for another six or seven weeks after the date mentioned that he actually took bread from our hands. That amount of time was still apparently necessary to work out the bread and finger tips problem. "No. 5" has for

many weeks now been completely domesticated, and comes and goes with the other four. He, too, like "No. 4," is a fully matured bird in fine plumage.

"Kuku," "Pidgy," and "Uncle Harry" are now some seven months old; they have given no trouble to the grown-ups, and to the younger folk of the station have, together with the Pukekos "Budget," "Toddy," "Jack," "Jill," and later "Septimus," been a source of unmixed pleasure and interest. Even if they left us to-morrow, we elders have learnt from them what we never could have guessed. The station children have gained more. To them it has been an education, I believe myself, of the soundest sort, not taught by parents out of books, but drawn by the children themselves direct from nature.



Child feeding Pigeons.



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